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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and to improve the character of the service rendered to the public.

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STEAMSHIP BUILDING

A "Manual of Steel Steamship Construction" has recently been published in Germany, and its author, Herr Otto Schlick, in his introduction presents an interesting chart showing typical steam vessels from the beginning of steam navigation to the present time, all drawn to the same scale. The column is headed by the tiny Comet of 1812, named perhaps from the train of fire left behind from the chimney when the boat was under way, and the last on the list is the new Kaiser Wilhelm II now being built for the North German Lloyd Steamship Co., which is planned to eclipse the White Star Line's Oceanic in length and the Hamburg-American's Deutschland, which now holds the ocean record, in speed.

Herr Schlick also presents some interesting notes regarding the development of iron and steel shipbuilding, which we abstract as follows:

The first iron vessels ever built were some canal boats, constructed in England in 1787. Before this time iron could scarcely have been applied to boat construction, since it was only in 1784 that the process of rolling iron plates came into use, and it was in 1786 that the first rolled iron plates were used in boiler construction.

Although from this time on there was a somewhat extensive application of iron to canal boat construction in Staffordshire, it was not until early in 1822 that a great stride was taken in advance by the construction of the steamboat Aaron Manby, which was worked up at Horsley and sent to London for erection. This steamer, under the command of Captain (afterwards Sir Charles) Napier, went direct from London to Havre, and was then put at work upon the Seine, where it rendered satisfactory services for a long time.

Two years later, in 1824, the Shannon Steam Packet Co. had an iron steamer built for river service, and this was soon followed by five others. Progress along these lines then became more rapid, and a number of firms at Liverpool and on the Thames turned out this class of work. The first iron sailing ship was built in 1838, by Jackson & Jordan, of Liverpool, and was called the Ironsides.

In 1843 the Great Britain was built. This vessel was of dimensions that had been unheard of up to that time, and marked a great advance in the development in iron shipbuilding. The ship was also the first large screw steamer. She was built at Bristol for the Great Western Steam Packet Co., and had a length of 320 feet, a breadth of 51 feet and a depth of hold of 32 feet. On a draft of 19 feet this ship had a displacement of 3,900 tons. It had a capacity for about 1,000 tons of coal, 500 tons of lading and 300 passengers. The vessel was, however, an unfortunate one, and went ashore in Dundrum bay on her first voyage, where she lay for a long time.

For some time after this the iron shipbuilding industry remained at a standstill, and the dimensions of the Great Britain were only slightly exceeded in rare instances, and the famous Great Eastern was produced. This ship, which was so enormous that it has only been equaled in very recent years by the largest types of trans-Atlantic express steamers, was built at Millwall in 1857 after the plans of Brunel and Scott Russell. Although it was commercially a total failure, its construction must, nevertheless, stand, in many respects as a sample of modern design. Its length was 680 feet, its breadth 83 feet and it depth 38 feet, while its registered meaurement was 18,915 tons.

Curiously enough the construction of the Great Eastern exerted no marked influence upon iron shipbuilding, since the relative size of steamers remained the same both before and after its completion and the latter growth was quite gradual. In fact, it was more than half a century later or in 1899 that the length of the Great Eastern was slightly exceeded by the White Star steamship Oceanic.

Iron shipbuilding was developed at a much later period in Germany than in England. It is impossible, however, to state with certainty as to when the first was built. Two of the first, possibly the very first, iron vessels to be built in Germany, were the Konigin Maria and Prinz Albert, which were constructed in 1836 from the plans of Professor Schubert. The first iron seagoing steamship to be built in Germany was constructed at Hamburg in 1838, by Gleichmann & Busse, for a Holland firm, and was named the Willem I.

The German establishments for the construction of iron ships enjoyed a very rapid development. Their numbers increased from year to year, so that at the present time Germany possesses thirty yards for the construction of iron or steel sea-going vessels. In comparison with England, which now possesses more than 200 shipyards (though the great majority of them are engaged only in repairs and the construction of small vessels), this is a small number. But in the matter of their output, the German establishments compare very favorably with England. The extraordinary advances which Germany has made in steel ship construction are principally due to the extensive development of the great German steamship companies during the past ten years.

ASTRONOMICAL DATA FOR MARCH.

Astronomical data for March, 1902, furnished the MARINE RECORD by the Washburn observatory:

Mercury and Venus are morning stars the present month. The former is not very favorably situated for observation, but the latter is a conspicuous object appearing higher each morning in the sky. The planet will reach its greatest brilliancy as a morning star, on March 21st. Mars is too close to the sun for observation; Jupiter and Saturn make a bright pair of planets in the southeastern sky in the morning. Saturn rises about two and one-half hours before the sun at the middle of the month, and is followed within an hour by the brilliant Jupiter a little farther north.

The times of sunrise and sunset at Milwaukee for the month are as follows:

	SUNRISE.	SUNSET.
March 1	6:29	5:40
March 11	6:12	5:52
March 21	5:55	6:04
March 31	5:37	6:16

The times of the moon's phases are:

Third quarter	March 2	4:39	a. m.
New moon	March 9	8:50	p. m.
First quarter	March 16	4:13	p. m.
Full moon	March 23	9:21	p. m.

The principal fixed stars visible during the month in the evening hours are:

To the west: Capella, Aldebaran, the Pleiades, Sirius, and the bright stars of the constellation Orion. Near the meridian Castor and Pollux and Procyon. To the east Regulus.

AMONG British Parliamentary papers recently published is one showing the aggregate naval expenditures during 1900 on sea-going force. According to the figures, the British expenditures of this character amounted to $142,394,215; United States, $66,927,870; Germany, $37,362,280; Russia, $43,314,005; France, $66,927,870; Italy, $24,515,545; Japan, $20,407,765; Spain, $5,000,595; Austria, $8,222,185; Netherlands, $6,803,295; Portugal, $2,537,150.

UNIVERSAL MARITIME LAWS.

The International Conference for the Unification of Maritime Law will be held in Hamburg, on September 25, 26, and 27 next, in continuation of the International meeting held in 1898, in Antwerp, in 1899 in London, and 1900 in Paris. The foreign members will be guests of the Hamburg Senate and of the German Association of Maritime Law, which is under the presidency of Dr. F. Sieveking, the well known president of the Hanseatic Court of Appeal. The foremost subject on the agenda paper will be the definite adoption of an International Code on the Laws of Collision at Sea and Salvage. This code embodies the various principles which have been debated and carried at the former meetings, and relate, for instance, to such matters as collisions where both ships are to blame, compulsory pilotage, respective liability of tug and tow, obligation to stand by, and various other points of practical importance on which the laws of nations very widely differ at the present day, and which it is desired to bring under one uniform set of rules. The draft of this International Code has been prepared by a committee under the presidency of Lord Alverstone, Lord Chief Justice of England, in accordance with the resolutions of the former International meetings, and will now be submitted to the Conference at Hamburg. After passing this meeting, it is expected that the Governments will be approached in order that the matter may be referred to a diplomatic conference. The other points to be dealt with are the laws as to jurisdiction in collision cases, and the divergencies between existing laws as to mortgage, privileges in ships, and the rights "in rem." Amongst others, Lord Alverstone, Mr. Justice Phillimore, Sir John Glover, Mr. Charles MacArthur, M. P., Dr. Stubbs, Mr. Douglas Owen, Mr. Stanley Mitcalfe, Professor Lyon-Caen (of the Institute of France), Minister Beernaert (Brussels), late Minister Boseli (Rome), Senator Rahusen (Amsterdam), Mr. Le Jeune and Mr. Louis Franck (Antwerp), Mr. Clunet (Paris), Mr. Musnier (Messageries Maritimes, Paris), Mr. Autran (Marseilles), Professor Platou (Christiania), Mr. Hindenburg (Copenhagen), and Mr. de Gunther (Stockholm), are expected to be present. On the German committee we note the names of Dr. F. Sieveking, Mr. A. Duncker, President of the Hamburg Committee of Underwriters, Mr. Woermann, President of the Hamburg Chamber of Commerce, Dr. Wiegandt (North German Lloyd), and many other prominent men in the German maritime circles. The Conference is organized by the "International Maritime Committee;" and the preliminary reports and papers and any other information may be obtained, on written application made to the honorary secretary of the International Maritime Committee at Antwerp.

CANADIAN IMPROVEMENTS.

In the Dominion House the most important events of the week have been the adoption of the address and the bringing down of the estimates for the fiscal year ending June 30th, 1903, which were presented to the House on Monday evening, just four days after the opening. Mr. Bourassa offered an amendment to the address dealing with the railway policy, but, after speeches had been made by himself, Mr. Tarte, Mr. Haggan, Mr. J. Robinson and W. F. McLean, the amendment was withdrawn.

The estimates call for an expenditure on the consolidated fund account of $47,845,038 and an expenditure of $5,516,600 on capital account, making a grand total of $53,361,638 or an aggregate reduction of $6,563,102 as compared with last year.

In Collingwood the grants set apart for the harbors and rivers of Ontario amounted to only $354,100. The improvements which have been going on during the past two or three years will be continued and $40,000 has been set apart for the current year. Others harbors so fortunate as to receive grants are Depot Harbor, $65,000; Goderich, $10,000; Meaford, $30,000; Midland, $8,000; Owen Sound, $24,000; Sault Ste. Marie, $25,000; Southampton, $10,000 and Toronto, $8,000.

A revision in colors, of the Chart of Lake St. Clair, has just been issued and is now on sale at the U. S. Lake Survey Office, 33 Campau building, at 15 cents per copy. Also a revision in colors, of Chart No. 2, St. Mary's river at 18 cents per copy.

PORT HURON.

Special Correspondence to The Marine Record:

The Port Huron and Duluth Steamship Co. has chartered the steamers Buel and Wyoming for the coming season.

Capt. John McNab, of the steamer United Empire, is at Toledo, looking for a tug for the Northwestern Transportation Co.

Grand Capt. John C. Silvia delivered an interesting address before the Huron Harbor No. 46 on Saturday evening in the rooms in the White building.

During the month of February vessel Inspectors Stewart and Van Liew issued 167 licenses. One hundred of these were to masters and pilots and 57 to marine engineers.

Mr. and Mrs. J. Hogan gave Andrew Wilson a send-off party at their home on Lapeer avenue, Friday evening. Mr. Wilson leaves to-day to fit out his steamer for the season.

Capt. Thompson informed the Herald that a harbor tug will be put into commission in this city beginning tomorrow morning. The boat will remain here for the balance of the season.

The tug B. W. Aldrich, owned by Pelton & Reid, of Cheboygan, has been sold to Port Huron parties, at which place she will be taken on the opening of navigation and operated from.

The steamer Conger on Wednesday afternoon broke the ice in Black river to a point as far up as the Jenks' shipbuilding yard. The boat had no great diffculty in plowing through the ice.

Capt. Slyfield says he has advices from the Upper Peninsula that the snow is rapidly disappearing and that logging operations have been suspended. The captain predicts an early opening of navigation.

The ice has left the lower end of Lake Huron and there is now clear water to a point above the life-saving station. McCollom & Co. had about finished cutting ice when the ice bridge gave way and the lake was cleared.

The new steel steamer No. 17 at the yards of the Jenks Ship Building Co., will be launched at 2 o'clock Saturday afternoon. The steamer Conger has broken the ice so that no difficulty will be experienced in dropping the boat into the water.

Mayor Moore has received information to the effect that the Cuyahoga Contracting Co. is about to get its machinery on the ground and will begin work on the canal soon after the first of March. A son of A. W. Colwell, who built the Marine City sugar factory, will be the engineer in charge.

The new steel steamer Kanawha was successfully Saturday afternoon. The Kanawha is modeled after the steamer Kennebec, which was built at the Jenks yard two years ago. The boat will be complete in time for the opening of navigation. She is being built for F. A. Cheesebrough, of Bay City.

The steamer Argonaut is in the lower dry dock for repairs. The St. Clair river is now free from ice to a point below Marine City. On Saturday scores of men stood in front of the entrance to Shipmasters' Association rooms and the Marine Engineers' rooms. The day was a pleasant one and all of the men gave it as their opinion that there would be an early opening of navigation.

The new steel steamer Kanawaha known as No. 17, was successfully launched at the yards of the Jenks' Ship Building Co., shortly before two o'clock this afternoon. The ice in the river had been broken up by the steamer Conger during the week. The Kanawaha is modeled after the steamer Kennebec, which was built about two years ago. The launch was witnessed by a large number of people, as it was the first winter affair of the kind ever known in Port Huron. The boat will be completed in time for the opening of navigation. The Kanawaha was built for F. A. Cheesebrough, of Bay City.

The following Port Huron captains will command steamships belonging to the steel company during the present season: Steamer Griffin, C. E. Coblar; steamer Maruba, W. A. Reid; steamer Maricopa, H Zealand; steamer Rensalaer C. P. Chambers; steamer Superior, J. H. Sinclair. The following are the appointments to the Northwest Transportation Co.'s fleet for 1902: Huronic, Capt. W. J. Bassett; engineer, S. Brisbin; purser, P. Patterson; steward, T. R. Ingles. Monarch, Capt. E. Robertson; purser, J. H. Ronan; engineer, T. O. Bard; steward, J. J. Dowding. United Empire, Capt. John McNab; engineer, Frank Cleland; purser, J. R. Young; steward, F. Bailey.

DULUTH-SUPERIOR.

Special Correspondence to The Marine Record:

The heavy flow of water and the boiling of quicksand expected to be encountered at a depth of fifty-eight or sixty feet in the new shaft at the Mass mine, Negaunee, Mich., has not yet materialized, though the shaft has attained a depth of over sixty-five feet. This is gratifying to the management of the Cleveland-Cliffs Co., as well as to Capt. James H. Rough, who is directing the work.

Eight million bushels of Canadian wheat have been received at the head of the lakes in bond, of the crop of 1901. This is by far the greatest amount of wheat ever received here in one year from across the international border, and there is a prospect that considerable more will come. Reports of late as to the probable quantity have been much exaggerated. It is possible that 2,000,000 bushels more may be received in bond, but not to exceed that.

In an editorial advocating a tonnage tax upon iron ore, the Minneapolis Tribune is guilty of a grevious mis-statement. It says: "The state of Michigan had a long struggle with the problem of taxing mines and finally settled down to the tonnage tax as the most certain and equitable method." The facts are exactly the reverse. After several years of a specific tax upon every ton of iron ore and each pound of copper produced, Michigan finally abandoned the system entirely and now taxes its mines exactly as it does other classes of property in the state.

A large force of mechanics has been placed at work upon the fleet of vessels belonging to the Pittsburg Steamship Co., which is wintering in this port. Almost all of the vessels are being thoroughly overhauled, and before the work is completed thousands of dollars will have been expended. All of the repair work is being done by the Superior ship yard. Both the exterior and interior of the vessels are being repaired, and all of the engines will be overhauled. It is expected that before the fleet leaves the harbor a large share of them will be put in the two drydocks. The engineers of the vessels are on hand, and are superintending the work in their departments.

Loggers in this section have already sustained serious loss as a result of two weeks of soft weather, culminating in a heavy rain, and unless a freeze up comes and continues for several weeks, ruin threatens many of the small jobbers. Both the snow and ice roads have been knocked out, and skidding and banking is now impossible. With no work for the men, some forces are being materially cut and at other camps operations have been entirely suspended. It is in the continuation of the thaw, however, that the greatest fear rests, since it means that water driving the logs in the spring will be exceedingly short and practically all of the cut will have to be left on the skids and banks until next year, and incidentally run the risk of fire and damage by worms. The outlook for lumbermen, is a dismal one and the loss at present reaches many thousands of dollars.

The lumber stocks on the docks at Duluth and Superior on March, amount to about 172,200,000 feet. The lumber cut of the Duluth district for the winter, up to March 1st, is 60,000,000 feet. Two mills, that of Alger, Smith & Co., and Hubbard & Vincent, are still cutting. The former has been sawing steadily all winter and the latter started two weeks ago on a contract to cut 30,000,000 for F. L. Gilbert. The St. Louis Lumber Co.'s mill recently finished its winter cut of 11,500,000 feet for the same man. At the close of the navigation season last fall the stocks of lumber amounted to 140,000,000 feet. Very little of the dry lumber remains unsold, as sales have been numerous during the winter. The largest stock of dry lumber is owned by the Lesure Lumber Co., and amounts to 6,000,000 feet. The outlook for the lumber market at the head of the lakes for the season of 1902 was never better than at the present time. Manufacturers are confident that they will get good prices and are not over anxious to sell at the present time. Buyers from the east have been plenty in Duluth since the first of the year. Sales for the past week have amounted to 30,000,000 feet.

A concerted effort will probably be made by the Northwestern wheat interests to have Congress remove the tariff from Canadian wheat. Grain exchanges over the country will be asked to join in the movement. The argument to Congress will be that, under the present system, the moderate amount of wheat Canada has to export spoils the market in Great Britain for the American raiser and exporter, although out of proportion to the amount that Canada has to spare. Under present international tariff arrangements, the Manitoba wheat has practically but one market, the English, and as this wheat is so restricted as to market, it makes a particularly mean competitor for the American grain. It will be urged that, with the Manitoba wheat admitted free into this country, it would disappear quickly and without appreciably affecting prices. The American miller would have a chance to make a profit out of it, and the American traders a chance to merchandise it. As for the American farmer, who might raise the objection he needs protection if the other fellow is to get it, it will be claimed the American farmer suffers more from Manitoba competition while the Canadian market for his grain is so limited, than if the Canadian wheat were permitted to come in free and mingle with the big crop of this country.

CLEVELAND.

Special Correspondence to The Marine Record.

March 7th, sun rises, 6:25; sets, 5:58; March 10th sun rises, 6:20, sets 6:01; March 13th sun rises, 6:14; sets 6:04.

Messrs. Bartlett and Tinker have been appointed the Cleveland agents of the Union Transit Co., vice A. E. Thompson, resigned. Their offices are at No. 57 River street.

The following meteorological observations are furnished by the office of the United States Weather Bureau for the week ending March 5th: Prevailing wind direction for the week, southeast; highest velocity, 64 miles from the southeast on the 28th; mean temperature for the week, 37; highest temperature, 59 on Feb. 28; lowest, 23 on Mar. 4th. Sunrise and sunset data computed for local time;

About 1,000,000 tons of iron ore will be moved from Michipicoten to Lake Erie ports the coming season. This entire output has already been sold. In addition to the four steamers and two barges that carried Michipicoten ore last year, the Clergue people have chartered 16,000 of additional tonnage. The names of the vessels secured are not yet given out, as there are yet some details of the charter to be completed.

Trouble between the boilermakers and employers has been brewing for some time. A minimum wage of twenty-seven cents per hour has been paid, but the working day has been of ten hours' duration. The union demanded that they should be paid $2.75 for a day's work of nine hours. To this demand the employers refused to concede, and in consequence thirteen out of fourteen of the Cleveland shops are idle.

Although prices for lake coal will not be fixed until the latter part of the month, some of the shippers to the head of Lake Superior are doing a little feeling around, and vesselmen could probably make season contracts at last year's figure, which was 35 cents. The leading owners say that they will not tie up at that figure, and are holding for 40 cents to the ports at the head of Lake Superior and 50 cents to Milwaukee.

It is likely that the shippers will be able to find more than the disposition of the vessel owners before they meet to fix the prices, and present indications are that they will adjust their prices to suit an increasing carrying charge. One reason why the vessel owners are holding aloof both from ore and coal contracts, is that the market is constantly getting stronger. There is even a suggestion that some owners feel that they acted hastily in accepting eighty cents on ore between Duluth and Ohio.

The situation, as pertains to the coming season's movement of iron ore, has not changed in two weeks. Some few of the smaller shippers seem to have entirely closed up their business, as far as they expect to do it by contract vessels, and are therefore off the market. The larger shippers, however, have done practically nothing. The information up to date is that the total tonnage covered approximates 4,000,000 with none of the bigger factors represented. The latest information also has it that the sales of ore are now about completed.

The survey of the Cleveland harbor, preparatory to the spring improvement work has been completed and the chart has been constructed. This is probably the most complete document of its kind on the lakes. The engineers took 6,500 soundings inside of the harbor and the line cast, if pieced together, would have extended twenty-five miles. The survey also included the basin beyond the west arm of the breakwater, which it is intended to improve during the year. An appropriation in the rivers and harbors bill makes provision for this improvement. Heretofore the basin has rarely been used.

William Kennedy is the recipient of a handsome jewel awarded him this week by the Marine Engineers' Beneficial Association. The honor was voted upon and granted at the 26th annual convention of the order held in this city last year, and is the second presented to any member of the association, William Sheffers, of Baltimore, Md., holding the other. Mr. Kennedy was a charter member of the Cleveland lodge, founded in 1865, and first started his sailing career in 1859. He was for 30 years in the New York Central and Western Line, between Buffalo and Chicago, and was second engineer on the Peuabic, Capt. George P. McKay, when she sunk, through collision on Lake Huron, in 1865.

Dan C. Kingman, major of engineers, in charge of the Cleveland district of rivers and harbors work, has been called to Washington for a consultation with the heads of the departments. The exact purpose of the visit is not known, but the presumption is that it has reference to the bill for the appropriation for rivers and harbors work. It is evident now that the hydraulic dredge which Major Kingman has asked for Cleveland is not in the present bill as outlined on Sunday morning. Some of the friends of the major have suggested that he go to Washington to father his own movement, knowing his ability as an advocate before a committee. Ways have been suggested by which it is possible that the committee may wish to decide to take off some of the appropriations for dredging in the district this summer and apply those amounts to the

purchase price of a dredge. Major Kingman, however, believes that the projects he has advocated so far are important enough to demand the summer to insure that they be carried out, which he originally suggested. It is hinted, therefore, that he will oppose any measure which will seek to divert some of the present appropriation into a fund for building a dredge. The main objection to this plan is that it would leave no ready money for work this year, or little at best, and it will take at least a year to build such a dredging plant as Major Kingman wants.

It is expected that the coming season will be one of the best passenger traffic seasons on the chain of lakes that many of the old companies have ever seen. One of the evidences of the increased activity is the preparations which are being made by the D. & C. line, to look out for new business. By some, this is ascribed to the fear of competition from the Barry lines, but another explanation is equally patent. The Detroit & Buffalo line will take away from the D. & C. line much of the business it has hitherto carried from the Michigan territory for the East. This necessitates that the D. & C. offset this lost business with increased traffic between Ohio and Michigan. The same thing applies to the C. & B. line. Then the route must be fed, and with the three rushing for business some lively times are expected. This is especially true if the routes are to be increased by the arrival of the Barry brothers as a factor.

Ore is going forward from the docks to the furnaces more freely, and all the shippers report that they have fair shipping orders. The car supply is better now than it has been at any time since the close of navigation, but the ore carrying roads are still short of motive power. The movement to the furnaces during the winter would have been much heavier with a fair supply of cars, but the indications are that the dock will be in a little better shape at the opening of navigation than they were a year ago. Coal men are not in shape to talk lake freights, and will not until the latter part of the month, when prices for lake coal will be fixed. Vesselmen have not given the matter much attention, and what little talk has been doing has been on the basis of 40 cents to the head of Lake Superior and 50 cents to Milwaukee on season contracts. The general opinion is that it will be a good season in the coal trade, and that coal carriers will be wanted from the start, as most of the docks at the upper lake ports will be swept pretty clean. The leading dealers say that the prices for fuel for steamers will be about the same as they were last season.

There may be two changes in the rules for the government of the bridges over the Cuyahoga river, when Major Kingman submits them to the department at Washington to be promulgated as an order of the Secretary of War. At present the rules make no provision whatever for "bridge hours" on many of the railroad bridges. Those who work in "the flats" use these bridges both night and morning, and a delay of ten or fifteen minutes is oftentimes serious. It has been urged by some that the bridge hour extend to these structures as well. The objection is that they are not public thoroughfares in any way, and the decision to close them during certain hours of the day might be taken as conceding that the privacy of the bridges has been disturbed, and the public in general has a right to travel over them almost at will. This is against the contention of the railroads owing the bridges. However, it is possible that the bridge hour will be made general, even in the face of this seeming invasion of the private right of the company to the bridges in question. The vessel men have fought the provision of the bill which gives a railroad the right to hold a bridge closed when an express train is known to be within five minutes running time of the bridge. The vessel men have frequently contended that the State law provides that all trains must stop at these bridges, which statement the railroad men refute by showing the qualifying statute which makes provisions for the existence of certain signals announcing the bridge to be closed and locked. Whether this clause will be allowed to remain in force or be changed has not been determined.

Towage—Loss of Tow—Liability of Tug.—The obligation of a tug is to use ordinary care and diligence with respect to all matters connected with the service she has engaged to perform, and a mere error of judgment on the part of the master will not render her liable for the loss of the tow, unless the error was so gross that it would not have been made by a master of ordinary prudence and judgment. The Czarina, 112 Fed. Rep. (U. S.) 541.

Marine Insurance—Notice to Brokers as Affecting Underwriter.—Insurance brokers, who undertake to procure insurance for a shipping agent or a shipowner, and do so, placing it with different companies, while they are agents for one of the companies issuing a policy for the collection of the premiums, are not its agents in respect to matters connected with the issuance of the policy, but the agents of the assured, and notice to them that the application, though in the name of the agent, was made on behalf of the shipowner, does not bind the company, which, in the absence of actual knowledge of such fact, is justified in issuing the policy in the name of the applicant, and in treating him as the insured. Mannheim Ins. Co., vs. Hollander, 112 Fed Rep. (U. S.) 549.

CHICAGO.

Special Correspondence to The Marine Record.

At the beginning of the week Chicago public and private elevators contained 21,733,000 bushels of grain as follows: Wheat, 11,094,000 bushel; corn, 7,034,000 bushels; oats, 2,157,000 bushels; rye, 1,156,000 bushels; barley, 292,000 bushels. The amount of grain afloat in vessels remains unchanged, viz: 417,000 bushels of wheat and 77,000 bushels of rye.

The railroads have doubtless won in their contest with lake steamboat lines over the payment of commissions of ticket sellers of the railroads by the steamboat companies. General passenger agents of the Chicago lines admitted as much this week, and while some plans to get around the decision of the railroads are under consideration, it does not seem likely that anything further can be done.

The report from Washington that the $345,000 estimate for enlarging and deepening Waukegan's harbor has been put in the new harbor bill gives bright prospects for securing the money, as the bill is expected to pass this time. The item was in the bill that failed of passage a year ago. The appropriation of the sum would greatly add to Waukegan's prestige as a port. The Elgin, Joilet & Eastern Railroad has a big slip and dock improvements here planned, dependent on the passage of the bill.

The first boat to reach Chicago from the east shore this spring was the Edward Buckley, which arrived from Manistee. She has a cargo of 1,000 tons of salt. It is said the early opening of navigation is due to the efforts of the salt trust in getting its product to the market with as little delay as possible. It is expected that several others of the steam barge fleet will shortly enter the salt trade on Lake Michigan, but the big fellows, whose business takes them to the lower lakes, will have to wait for some weeks before the southerly winds open up a passage for them through the Straits of Mackinac. The Buckley reported but little trouble in getting through the ice floes on the way over.

The railroads are to take up, at a meeting at Chicago next week, the question of giving cheap rates to the sailors going to their boats from their home towns, and returning when navigation has been suspended. For years the railroads in the lake region have given the sailors a half rate, but last season they came to the conclusion that the privilege had been abused, and determined, if this decision should be borne out, that they would grant no further concessions. The committee appointed for the purpose has been investigating the question for the last month, and will report at a meeting of the Central Passenger Association next week at Chicago. It is expected that the concession will be withdrawn.

The unloading committee of the Lumber Carriers' Association will meet in Chicago this week, to fix the scale for that port. The Detroit members of the committee met the Buffalo delegation, and with them proceeded to Chicago, where a lumber dealers' convention is in progress. The lumber dealers of Detroit have arrived at an agreement with the International Longshoremen's Association as to the unloading scale to be in force at this port during the coming season. It will be the same as the scale granted Messrs. Kotcher and Wilton over a week ago, and through a misunderstanding, was supposed to cover the entire port. The docking charges were not agreed upon, this being left to the individual owners to arrange with the local unions.

The right of cities and towns to construct waterworks cribs in navigable waters and their liability in case vessels run into the cribs will be the basis of an important decision by Judge Kohlsaat in the United States district court this week. The decision will come in the Conestoga case, where the Anchor line is endeavoring to collect some $70,000 from the city of Chicago on account of a collision three years ago by the Conestoga with the waterworks crib off Chicago avenue. The case has been sharply contested throughout. The attorneys for the city feel confident that the Anchor line will not be able to recover.

Capt. Peter Barry of the Barry Bros.' Transportation Co., Chicago, is making a trip to various ports on Lake Michigan with a view to acquiring dock property for the accommodation of the company's vessels. The work of erecting suitable freight and passenger stations with wharves will, it is said, be started very soon at Manitowoc, Wis., and it is believed an attempt will also be made to secure dockage at Menominee and Marinette in order that the Barry line may get in on the bay traffic, now handled exclusively by the Goodrich line. The steamers Badger State and Empire State will go into commision April 1. They are now undergoing repairs at Manitowoc.

The question of the current in the river was up in the U. S. District court here last week, in the case of Wallace vs. steamer Worthington. During the season of 1900 the Worthington, in passing up the south branch of the river with the current, came into collision with some canal boats moored to the south bank near Halsted street, doing considerable damage. A libel was filed against the Worthington and the case was on the admiralty calendar a year ago. Ray G. MacDonald, Esq. proctor for the steamer, filed a petition under admiralty rule 59 making the Sanitary District a party to the suit, and the case was continued until the present calendar. The Worthington's petition alleges that the current at the time and place of the collision was in excess of the three miles per hour named in the act authorizing the construction of a drainage canal, that the steamer starboarded slightly to avoid a pile driver moored at the north bank of the river, that the current caught her stern so that she failed to respond to her helm, and that she was carried by the current down onto the canal boats. Witnesses on behalf of the steamer testified that the current was in excess of three miles per hour, while the experts of the Sanitary District attempted to demonstrate mathematically from the readings of their guages at Lockport, cross sections of the river, and other considerations that it was less than one and one-half miles. The case will probably go to the Court of Appeals.

The Shipowners' Drydock Co., of Chicago, in which local vessel owner are large stockholders, has purchased the shipyard which has been operated at Manitowoc by Burger & Burger, for a number of years. Mr. William Watterson is in charge of the Chicago plant. H. B. and G. B. Burger have transferred their shipyard and drydock property at Manitowoc, to the Shipowners' Drydock Co., of Chicago, and the result will be the establishment of one of the largest drydock and shipyard plants on the lakes at that point. In order to hasten the consummation of the deal and enable the Shipowners' Drydock Co. to realize its plans, the Wisconsin Central and Chicago & North-Western railway companies have each donated to the corporation four acres of land adjoining the Burger property. This will give the Chicago people a tract of fifteen acres in all and insures the establishment of a plant on Lake Michigan second only to that of the American Ship Building Co., at South Chicago A drydock capable of receiving the largest vessels on the lakes and the erection of a plant for the construction and repair of steel vessels will be entered upon early in the season so as to be ready for operation by another winter. This move of the Chicago Shipowners' Co. means active competition with the American Ship Building Co., not only for construction but repair work. Manitowoc has for years been in active and successful competition with Milwaukee in the latter line, and under the new regime this competition will no doubt prove more active and successful than ever. It is intimated that an engine building plant is to be established in connection with the enlarged shipyard, but under separate ownership. This would fill every requirement, as Manitowoc already has two first-class boiler manufacturing establishments.

FLOTSAM, JETSAM AND LAGAN.

The steamer Germanic is the first vessel of the Milwaukee winter fleet to receive a cargo of grain for spring delivery at Buffalo. It consists of 75,000 bushels of barley and the freight rate is 2 cents.

The crew of the Milwaukee life saving station, under Capt. Ingar Olson will be the same as last year, viz; Julius Meyer, Richard Wachsmuth, Joseph Humphrey, Chris Michaelson and Edward Garwick of Milwaukee; Cornelius Nissen, Sister Bay; Henry Sporland, Sturgeon Bay, and Samuel Post, Bailey's Harbor.

Several changes of masters in the Pauley fleet are announced. Capt. Herman Oertling will succeed Capt. Smith in commanl of the steamer Walter Vail. Capt. Alexander Clegnorn will not be reappointed to the command of the steamer Thomas Davidson, it is said. The name of his successor remains to be learned.

There were at the beginning of last year, 2,091 vessels of a tonnage of 2,328,474 belonging to Liverpool, while 3,516 vessels of 6,050,526 tons entered the port during 1900. Owing to the increase of steam, and shorter sea voyages, many men have their homes in Lancashire and Cheshire, but a great number are to be found staying on board ships in port for a few days, or boarding ashore for a still longer period; 6,635 men boarded at the Sailor's Home during 1901.

Sandusky is to have a new waterworks pumping station. That was decided upon at a meeting of the trustees last week. The new engine will cost $35,000. The plan of purchase is as follows: The pump is to be leased to the city by the Holly Manufacturing Co., of Lockport, N. Y., for a period of six months, the cost for that time being $2,500. This is repeated for seven years, at which time the pump becomes the property of the city. The new pump will be of 10-million capacity and thoroughly modern in every particular.

At a meeting at Washington on Friday the old dispute over the "Soo" power canal being built by the Clergue interests will be revived. The Lake Carriers' Association has sent representatives to fight the measure. Mr. Clergue will defend his interests. The lake carriers will argue that the movement will lower the levels of lake Superior, and Mr. Clergue will give the assurance that navigation will be in no wise interfered with by his power canal. It will be virtually the rehashing of the old matter that has been up for the last two years, or since the power canal was first proposed. It is intimated that the Lake Carriers are in reality not openly antagonistic, but wish to safe-guard the vessel owners' interests by seeming to oppose the measure so that precautionary clauses and governing phrases may be inserted. Then, if at any time the canal does prove to be a detriment, there may be a way out of the difficulty.

APPOINTMENT OF MASTERS AND ENGINEERS.

SICKEM, M. Marine City, Mich.

STEAMER.	CAPTAIN.	ENGINEER.
George King,	William Burns,	Peter Britz.
S. K. Martin,	—— Reynolds,	.....
M. Sicken,	John Kuhn,	Wm. Sicken.
Teutonia,	H. Lawrence,	.....
Thomas Gawn,	J. Lawrence,	.....
Levi Rawson,	John Lorenzen,	.....
D. Pendell	Joseph Chartrau,	.....
E. J. McVea	Joseph Sharkett,	.....
Melvina,	Henry Holland,	.....
C. Spademan,	Geo. Gullett,	.....
St. Joseph,	.....	.....
Grace Whitney,	Henry Kuhn,	.....

NORTHWESTERN STEAMSHIP CO., W. F. Purdy, Manager, Counselman Building, Chicago.

Northwestern,	John Tower,	J. Caughlin.
Northman,	E. H. Read,	George Aldman.
Northeastern,	John Crangle,	Angus Marshall.
Northtown,	J. Robinson,	Neil Marshall.

NORTHWESTERN TRANSPORTATION CO., L. C. Waldo, Manager, Detroit.

Harvey H. Brown,	D. Girardin,	L. M. Park.
Fayette Brown,	Jos. H. Powell,	N. Anderson.
S. R. Kirby,	John F. Jones,	Chas. E. Collins.
Geo. E. Hartnell,	C. L. Allen,	.....

STEVENSON, JOHN, Detroit.

C. H. Starke,	Wm. D. Crosby,	John Lorey.
Miami,	H. Huyser,	John Elsey.
Metropole,	W. J. Joark,	A. Hayward.
Gebhard,	Biddlecomb,	.....

MITCHELL & ROWLAND LUMBER CO., Toledo, O.

Sachem,	H. R. Moore,	Thos. Leitch.
George B. Owen,	E. G. Kohnert,	.....
Abram Smith,	Nels Johnson,	.....

LAKE TRANSIT CO., Joseph E. Ball, Superintendent, Buffalo, N. Y.

Lackawanna,	F. Weinheimer,	Chas. Van Every.
Scranton,	Jas. H. Greene,	F. D. Fredericks.
Russia,	Jno. D. Greene,	W. Brown.

CURTIS & BRAINARD, Toledo, O.

Cherokee,	James Mara,	J. E. McSweeney.
Mohegan,	William Hagan,	.....

EDDY-SHAW TRANSIT CO., Bay City, Mich.

E. C. Pope,	Wm. A. Williams,	F. J. Fitzgerald.
Selwyn Eddy,	A. J. Mahon,	Albert Simpson.
Penobscot,	G. C. Stevenson,	E. A. Hoffman.
City of Bangor,	W. H. Moody,	Jno. M. Conroy.
Simon J. Murphy,	William Cavers,	Henry Annett.
Howard L. Shaw,	John Burns,	S. G. Cowell.

SMITH, EDWARD, Buffalo.

Thomas Cranage,	J. S. McNeil,	John Blanchard.
City of Paris,	E. D. Ballentine,	W. H. McDo'g'll.
City of Venice,	Philip Broderick,	J. C. McDougall.
Samuel Marshall	August Jean,	.....
Samoa,	John Isbester,	.....

SHARP, W. H., Bay City, Mich.

J. P. Donaldson,	Jas. Connally,	John Fettig.
A. W. Wright,	T. Thorkildsen,	.....

FRANCOMBE, J. A., Detroit.

W. R. Stafford,	B. C. Chamberlain	J. A. Francombe.
Ed. McWilliams,	Alex. Sharron,	.....

M'VITTIE, ALEX, Detroit.

Senator,	Wm. A. Irvine,	Wm. J. Bolton.
Colonel,	Augustus Ames,	August Cobo.

SANDUSKY LUMBER & BOX CO., Sandusky, O.

Linden,	J. H. Warwick,	L. Hansen.
Charles Wall,	Dan Nathan,	.....

PRICE, A. F., Fremont, O.

Isaac Lincoln,	Peter Ekbert,	Leon Feltig.
Robinson,	Ant'ny Pappinaw,	.....

GRAVES, LUTHER P., Buffalo.

Charles Hebard,	Geo. D. Ryan,	W. Schumacker.
Annabell Wilson,	Peter Johnson,	.....
Aloha,	William Carter,	.....
J. A. Francomb,	.....	.....

CLEVELAND CLIFFS IRON CO., J. H. Sheadle, Mgr., Cleveland.

Pontiac,	J. M. Johnson,	J. T. Rees.
Frontenac,	G. D. Tulian,	J. B. Hart.
Cadillac,	W. J. Wiloughby,	C. H. Mennuir.
Choctaw,	H. H. Parsons,	Chas. J. Love.
Andaste,	C. E. Sayre,	Wm. Donovan.
Falcon,	C. A. Anderson,	Chas. F. Beebe.
Pioneer,	Geo. B. Brock,	Thos. Durkin.
Chattanooga,	A. C. Reimers,	.....

PRESQUE ISLE TRANSPORTATION CO., J. H. Sheadle, Mgr., Cleveland.

Presque Isle,	J. B. Lowe,	Thos. Blain.
Angeline,	S. N. Murphy,	E. V. Barry.

HOPKINS STEAMSHIP CO., J. H. Sheadle, Mgr., Cleveland.

Centurion,	S. A. Lyons,	T. B. Kelley.

ST. CLAIR STEAMSHIP CO., J. H. Sheadle, Mgr., Cleveland.

Kaliyuga,	T. E. Murray,	Otto C. Hoffman.

WM. G. MATHER, Owner, J. H. Sheadle, Mgr., Cleveland

E. S. Pease,	John Lewis,	.....
Planet,	.....	.....

MONTHLY SHIPBUILDING RETURNS.

TREASURY DEPARTMENT, OFFICE OF THE COMMISSIONER OF NAVIGATION, February 28, 1902.

The Bureau of Navigation reports 46 vessels of 8,607 gross tons were built in the United States and officially numbered during the month of February, 1902, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	26	1,793	10	459	1	3,381	2	739	39	6 372
Porto Rico	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pacific	3	1,820	3	409	.....	.....	.....	.....	6	2,229
Great Lakes	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Western Rivers	.....	.....	1	6	.....	.....	.....	.....	1	6
Total	29	3,613	14	874	1	3,381	2	739	46	8,607

The largest steel steam vessel included in these figures is the Atlas, 3,381 tons, built at Bath, Me., and owned by the Standard Oil Co.

MESSRS. BIGELOW BROS., Chicago, Ill.

STEAMER.	CAPTAIN.	ENGINEER.
Madagascar,	John Jenks,	Wm. Nerreter.

MESSRS. MITCHELL & ROWLAND, Toledo, O.

Sachem,	H. R. Moore,	Thos. Leitch.
Geo. B. Owen,	E. G. Kohnert,	.....
Abram Smith,	Nels Johnson,	.....

J. EMORY OWEN TRANSIT CO., Detroit, Mich.

John Owen,	E. F. Thorp,	S. L. Phillips.

LAKE MICHIGAN AND LAKE SUPERIOR TRANSPORTATION CO., Chicago, Ill.

Peerless,	H. C. Page,	J. R. Bennett.
City of Traverse,	Neil McCormick,	Edward Meeh.
Osceola,	Joseph White,	J. M. Oag.
Jay Gould,	Chas. Wilson,	Henry Chalk.

WOLVERINE STEAMSHIP CO., Detroit, Mich.

Senator,	Wm. A. Irvine,	Wm. J. Bolton.

MESSRS. ASHLEY & DUSTIN, Detroit, Mich.

Frank E. Kirby,	A. J. Fox,	H. L. Lewis.

MR. JOHN T. HUTCHINSON, Cleveland, O.

Germanic,	Benson Fox,	M. Jameson.
Queen of the West,	James Murphy,	Geo. Blauvelt.
Rube Richards,	H. T. Archer,	A. Rud.
E. C. Hutchinson,	J. J. Martin,	.....
May Richards,	A. McGougan,	.....

REPUBLIC IRON CO., Cleveland, O.

Republic,	Wm. Wegarvey,	John W. Lowe.
Continental,	W. A. Black,	A. B .McGregor.
Grace Holland,	B. M. Landfair,	.....

MR. R. R. RHODES, Cleveland, O.

Yale,	Jas. Jackson,	Harry Stone.
Minneapolis,	Geo. Moore,	D. J. McMillan.
St. Paul,	Peter Thompson,	Henry Stone.
W. Castle Rhodes,	P. Dowdell,	Guy Hemenger.
Huron,	W. Moore,	C. Folkerts.

MINNEAPOLIS, ST. PAUL AND BUFFALO STEAMSHIP CO., Buffalo, N. Y.

St. Paul,	Peter Thompson,	Henry Stone.
Minneapolis,	Geo. W. Moore,	D. J McMillan.
Huron,	W. Moore,	C. C. Folkerts.
W. Castle Rhodes,	P. Dowdell,	Guy Hemenger.

MESSRS. ALGER, SMITH & CO., Detroit, Mich.

Gettysburg,	Wm. Jagenow,	W. P. Wenner.

HARVEY H. BROWN, Cleveland, O.

Castalia,	C. C. Allen,	Edward Dempsey.

MIDLAND TUG & WRECKING CO., Ltd., Midland, Ont.

Magnolia,	R. Gilbertson,	Ed. House.
Metamora	James Tyndall,	Fred Chester.
Minitaga,	Ed. Burke,	Jas. McGregor.
Menodora,	George Kinney,	.....
Reliance,	F. Burke,	Frank Goodwin.

NESSEN & CO., J. O., Manistee, Mich.

F. W. Fletcher,	H. Bennett,	Geo. M. Hopkins.
Chas. Reitz,	Ole Olson,	Geo. Patterson.
John Mark,	N. Thompson,	.....
Agnes L. Potter,	And. Anderson,	.....

MATTHEWS LINE, Toronto, Ont.

Clinton,	J. D. Vanalstine,	Fred Hamelin.
Grimsby,	.....	.....
Emerald,	F. McMaster,	.....
Clara Youell,	John Joyce,	.....

CURTIS & BRAINARD, Toledo, O.

Cherokee,	James Mara,	J. E. McSweeney.
Mohegan,	Ed. McWilliams,	.....
Chippewa,	John Davidson,	.....
Mingoe,	A. Snelgrove,	.....

LAKE CHAMPLAIN TRANSPORTATION CO., Whitehall, N. Y.

J. G. Witherbee,	P. Dionne,	John Huyette.
R. H. Cook,	G. N. Sweeney,	Pierre Blair.
H. G. Tisdale,	A. Murray,	P. H. Matte.
Defender,	E. M. Rockwell,	Jos. Arquette.

GRAVES, LUTHER P., Buffalo.

Chas Hebard,	Geo. D. Ryan,	W. Schumacker.
Annabell Wilson,	Peter Johnson,	.....
Aloha,	Wm. Carter,	.....
Jno. A. Franc'b,	.....	.....

MYERS, J. A., 169 Jackson St., Chicago.

STEAMER.	CAPTAIN.	ENGINEER.
Otego,	Ed. Myers,	John Green.
S. A. Wood,	P. Myers,	.....
Oliver Mitchell,	S. Minskey,	.....
Bertha Barnes,	Thos. Myers,	.....

NIAGARA RIVER LINE, John Foy, Mgr., Toronto, Can.

Chippewa,	John McGiffin,	G. M. Arnold.
Corona,	Harvey Holmes,	Wm. Walsh.
Chicora,	Robt. Clapp,	Henry Parker.
Ongiara,	Hugh McIntyre,	Mac. Donaldson.

COMSTOCK, A. W., Alpena, Mich.

Simon Langell,	John Stewart,	R. Cameron.
W. K. Moore,	Bert Warwick,	.....
Interlaken,	Chas. Adams,	.....
Arenae	.....	.....

WILLIAMS TRANSPORTATION CO., H. W., So. Haven, Mich.

City of Kalamazoo,	David Morris,	Chas. LaBounty.
H. W. Williams,	Frank Swails,	P. Knaggs.
Glenn,	B. A. Cross,	R. Petterson.

ARGO STEAMSHIP CO., E. L. Fisher, Mgr., Cleveland.

Argo,	Geo. L. Cotrell,	.....
Dobbins,	Henry May,	.....
C. B. Jones,	John Nelson,	.....

JENKINS, JOHN, Marine City, Mich.

W. H. Sawyer,	John Jenkins,	.....
A. C. Tuxbury,	P. Ward,	.....
C. E. Redfern,	Wyman Powers,	.....

NORTHERN MICHIGAN TRANSPORTATION CO., Chicago.

Illinois,	Wm. Finucan,	Thos. Collins.
City of Charlevoix	W. Richardson,	Henry Bruton.

WHITE, GUY, Managing Owner, N. Tonawanda, N. Y.

Edward Smith,	Chas. D. Miller,	.....
Iron City,	Michael Nagle,	.....

STRONG TRANSPORTATION CO., Tonawanda, N. Y.

Eliza H. Strong,	Wm. H. Strong,	Albert E. Rhodes.
Commodore,	Chas. Pederson,	.....

PRICE, A. F., Fremont, O.

Isaac Lincoln,	Peter Ekbert,	Leon Feltig.
Robinson,	Ant. Pappinaw,	.....

ELLIS, CHAS. H., Managing Owner, Milwaukee.

Wilton,	Manning Kilton,	Sherman Mann.
Grace Grummond,	Jacob Benson,	.....

BECKER, W. H., Cleveland.

Geo. W. Roby,	John R. Preston,	C. J. Church.
Wm. F. Sauber,	W. E. Morris,	J. F. Quinn.

MONROE, THOS., Muskegon, Mich.

G. C. Markham,	A. Christensen,	A. Smith.
L. M. Davis,	H. Hermanson,	.....

SHARP, W. H., Bay City, Mich.

J. P. Donaldson,	Jas Connally,	John Fettig.
A. W. Wright,	T. Thorkildsen,	.....

CHARLEVOIX LUMBER CO., Charlevoix, Mich.

Pine Lake,	Eph. S. Small,	John Chemock.
Naiad,	C. Edwardson,	.....

ERICKSON, CAPT. JAMES, Managing Owner, Milwaukee, Wis.

Lake Forest,	Jas. Erickson,	.....
Hattie Hutt,	Martin Mathison,	.....

CROSBY TRANSPORTATION CO., Muskegon, Mich.

Nyack,	Chas. A. Lyman,	Carl Halberg.
Naomi,	Thos. Trail,	A. A. Green.

MYLES TRANSPORTATION CO., Ltd., Niagara Falls.

Myles,	J. S. Moore,	C. J. McGorley.

RARDON, J. J., Chicago.

Phenix,	E. C. Vanpatten,	Wm. Frazier.

LITTLE, JOHN, Port Huron, Mich.

George Dunbar,	John W. Little,	Jno. S. Brown.

HURLEY, T., Detroit.

Majestic,	M. G. McIntosh,	T. J. O'Connor.

ALGER, SMITH & CO., Detroit.

Gettysburg,	Wm. Jagenow,	Wm. P. Wenner.

BLODGETT, W. C., Buffalo.

STEAMER.	CAPTAIN.	ENGINEER.
Joseph,	Frank Conlin,	J. A. Braman.

CANDLER, H. & J. J. W. Candler, Mgr. Detroit.

Senator,	Chas. Anderson,	.....

DRIESKE & CO., WM., Chicago.

Ralph Campbell,	Peter Hansen,	.....

FARWELL, J. H., Detroit.

J. H. Farwell,	J. A. Duncanson,	Jno. Johnston.

GREEN, JOHN, Buffalo.

Lewiston,	D. F. McKenzie,	Jas. Green.

HARLOW, W. J., 706 Madison St., Toledo, O.

Harlow,	W. J. Harlow,	N. M. McNamara.

SEITHER TRANSIT CO., R. W. England, Mgr., 961 Third Ave., Detroit.

G. J. Grammer,	R. W. England,	Geo. B. Milne.
V. H. Ketchum,	Ed. D. Gatfield,	Jno. J. Booth.

FOSTER LUMBER CO., Milwaukee.

Normandie,	Wm. Ingalls,	Hiram Fuller.

WELLS, E. L., Port Huron Mich.

Hattie Wells,	Sylvester Ray,	.....

M'CORMICK, H. W., Bay City, Mich.

Oneonta,	Patrick Gordon,	.....

MILLER, J. B., Toronto, Ont.

Seguin,	J. B. Symes,	Ed. Welch.

ROBY TRANSPORTATION CO., L. C. Waldo, Mgr., Detroit.

L. C. Waldo,	J. W. Duddleson,	N. E. Allen.

UNITED STATES & ONTARIO STEAM NAVIGATION CO., Wm. Wollett, Mgr., Conneaut, O.

Shenango No. 1,	R. R. McLeod,	E. Wood.

STEWART TRANSPORTATION CO., A. E. Stewart, Mgr., Detroit.

C. F. Bielman,	Fred Stewart,	Robt. Lacey.

ROBERTSON, GEO., Grand Haven, Mich.

Sidney O. Neff,	Geo. Robertson,	Frank Greilick.

S. W. TRANSIT CO., Chas. T. Williams, Mgr., Cleveland.

A. C. Lindsay,	C. H. Woodford,	C. Burns.

BYRON WHITAKER, Detroit.

B. Whitaker,	L. Jones,	D. W. Blauvelt.

MEYER, W. H., Milwaukee.

Christopher,	W. E. Wright,	S. Pratt.

KING, A. B., Port Huron, Mich.

F. M. Knapp,	A. B. King,	.....

FARR, M. E., Managing Owner, care Detroit Ship Building Co., Detroit.

Yosemite,	Jno. T. Hutton,	J. W. McClure.

SYLVESTER BROS., Toronto, Ont.

St. Louis,	Geo. Williamson,	.....

NORTHERN STEAMSHIP CO., W. C. Farrington, Gen. Mgr., Buffalo.

North West,	G. A. Minar,	A. T. Stewart.
North Land,	J. J. Hartman,	F. D. Philp.
Northern King,	J. M. Saunders,	J. A. O'Mara.
Northern Queen,	W. A. Stevenson,	G. W. Towne.
North Wind,	E B. Blair,	T. Jackman.
Northern Wave,	M. S. Peterson,	J. J. Darcy.
Northern Light,	M. J. Haberer,	J. Dee.
North Star,	W. C. Brown,	W. T. Pike.

MITCHELL & ROLAND LUMBER CO., Toledo, O.

Sachem,	H. R. Moore,	Thos. Leitch.
Geo. B. Owen,	E. G. Kohnert,	.....
Abram Smith,	Nels Johnson,	.....

LAKE TRANSIT CO., Jos. E. Ball, Supt., Buffalo.

Lackawanna,	F. Weinheimer,	Chas. Van Every.
Scranton,	Jas. H. Greene,	F. D. Fredericks.
Russia,	Jno. D. Greene,	W. Brown.

HUTCHINSON & CO., Cleveland.

J. T. Hutchinson,	J. H. Smith,	C. R. Price.
City of Glasgow,	W. P Benham,	W. G. Thorn.
Abyssinia,	T. K. Woodward,	.....

REPUBLIC IRON CO., Cleveland.

Republic,	Wm. Megarvey,	John W. Lowe.
Continental,	W. A. Black,	A. B. McGregor.
Grace Holland,	B. M. Landfair,	T. H. Cosgrove.

ANN ARBOR R. R. & S. S. LINE, H. W. Ashley, Gen. Mgr., Toledo, O.

Ann Arbor No. 1,	H. F. Rydt,	P. H. Doyle.
Ann Arbor No. 2,	B. F. Tulledge,	W. H. Brown.
Ann Arbor No. 3,	W. P. Robertson,	C. M. Goodrich.

MARTIN, W. L., Mgr., Sheboygan, Mich.

Embury,	D. A. Curran,	.....
C. G. King,	Chas. Bennett,	.....
John T. Johnson,	Jas. Curran,	.....

NORTHWEST TRANSIT CO., Sarnia, Ont.

Huronia,	W J. Bassett,	S. Brisbin.
United Empire,	John McNab,	F. Cleland.
Monarch,	E. Robertson,	T. O. Bard.

M'KAY, R. O. & A. B., Hamilton, Ont.

Donnacona,	Jas. Mawdesley,	Robt. Duguid.
Strathcona,	Jno. A. Irving,	Jas. Smeaton.
Lake Michigan,	W. A. Corson,	Jos. Boulanger.

PRINGLE, JOHN C., St. Clair, Mich.

D. Leuty,	Jno. C. Pringle,	.....
Bottsford,	Ralph J. Pringle,	.....
F. B. Gardner,	John Burk,	.....

BRITTAIN, R. C., Saugatuck, Mich.

STEAMER.	CAPTAIN.	ENGINEER.
J. S. Crouse,	Alex. Schriver,	S. J. Johns.
Frank Woods,	C. B. Coates,	H. Randall.
O. E. Parks,	O. E. Parks,	R. A. Elliott.

IROQUOIS IRON CO., East Side P. O. Sta., Chicago.

Fred Mercur,	Alex. M. Jenkyn,	Wm. Teahan.
H. E. Packer,	Thos. J. Moran,	W. R. Patterson.

GRAHAM NAVIGATION CO., John P. Nagle, Mgr., Toledo, O.

Aztec,	E. F. Matteson,	John Leitch.
Miztec,	Harry Larsen,	.....

CLEVELAND & BUFFALO TRANSPORTATION CO., T. F. Newman, Mgr., Cleveland.

City of Erie,	H. McAlpine,	J. Y. Rendall.
City of Buffalo,	W. H. Smith,	Chas. Lorimer.

CARTER, E. D., Erie, Pa.

Luzon,	C. H. Wilson,	John Stevens.
Panay,	F. D. Welcome,	.....

DONOVAN, CAPT. TIMOTHY, Managing Owner, Oswego, N. Y.

John E. Hall,	T. Donovan,	John Donovan.
John R. Noyes,	G. Donovan,	.....

CONLON, J. & T., Thorold, Ont.

Erin,	P. Sullivan,	Geo. Milan.
Danforth,	Bernard McAvoy,	shr etao cmfw eta

CUMMINGS, M. J., Oswego, N. Y.

C. S. Parnell,	P. J. Griffin,	Martin Griffin.
Monteagle,	Wm. Griffin,	Wm. Brown.

MERCHANTS LINE, G. E. Jaques & Co., Mgrs., Montreal, Can.

Cuba,	Jno. T. Towers,	Wm. Kennedy.
Melbourne,	Arthur Lefebore,	C. McWilliams.

TABLE OF DISTANCES

Table of Distances at which objects can be seen at sea, according to their respective elevations and the elevation of the eye of the observer.

Hieghts in Feet	Distances in Statute or English Miles	Distances in Geographical or Nautical Miles.	Heights in Feet	Distances in Statute or English Miles	Distances in Geographical or Nautical Miles	Heights in Feet	Distances in Statute or English Miles	Distances in Geographical or Nautical Miles
5	2.958	2.565	70	11.067	9 598	250	20.916	18.14
10	4.184	3 628	75	11.456	9.935	300	22.912	19 87
15	5.123	4.443	80	11 832	10 26	350	24.748	21.46
20	5.916	5 130	85	12.196	10.57	400	26.457	22.94
25	6.614	5.736	90	12.549	10.88	450	28.062	24 30
30	7 245	6.283	95	12.893	11.18	500	29 580	25.65
35	7.826	6.787	100	13.228	11.47	550	31.024	26.90
40	8 366	7 255	110	13.874	12.03	600	32 403	28 10
45	8 874	7.696	120	14 490	12.56	650	33 726	29.25
50	9.354	8.112	130	15 083	13.08	700	35 000	30.28
55	9.811	8.509	140	15.652	13 57	800	37 416	32 45
60	10.246	8.886	150	16.201	14.22	900	39 836	34.54
65	10.665	9.249	200	18.708	16.22	1,000	41.833	36.28

EXAMPLE.—**A light 100 feet above the water will be visible to an observer whose eye is elevated 15 feet above the water, 15.9 nautical miles; thus from the table:—**

15 feet elevation, distance visible, 4.44 nautical miles.
100 " " " " 11,47 " "

15.91

Liability for Premiums—Insurable Interest.—Respondent conducted business as a shipping agent, and also president and principal stockholder in a steam ship company, the office of the two concerns being together. Insurance brokers applied to libelant in respondent's name for insurance, and a policy was issued in his name covering shipments on certain vessels of the company between certain ports for a year, "on account of whom it may concern," loss, if any, payable to respondent or order. Held that respondent could not avoid liability for premiums earned under such policy on the ground that the insurance was in fact effected on behalf of the steamship company, and that he had no insurable interest, the terms of the policy being sufficiently broad to entitle the company to avail itself of the benefit of the insurance in the risks covered by reason of his large holding of the company's stock. Mannheim Ins, Co., vs. Hollander, 112 Fed. Rep. (U.S.) 549.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD.)

Admirality—Limitation of Liability—Interest Where Defense is Set Up By Answer.—Where a shipowner in a suit in personam sets up his statutory limitation of liability in his answer, but the vessel is not surrendered, nor an appraisement had or bond given, he is chargeable with interest on the value of the vessel as it was at the time of or immediately after the injury sued for. Smith vs. Booth et al., 112 Fed. Rep. (U. S. 553.

Admiralty Jurisdiction—Maritime Contracts. A contract by men to act as seamen on a voyage to and from salmon fishing grounds in Alaska, to work as fishermen during the season, and assist in canning the fish on shore and in loading them on board for transportation, is one maritime in its nature, and which a court of admiralty has jurisdiction to enforce. Domenico et al., vs. Alaska Packers' Ass'n, 112 Fed. Rep. (U. S.) 554

Shipping—Demurrage—Delay in Presenting Claim.—Where libelant furnished barges for the use of respondent's testator, in transporting coal under a general arrangement by which bills for such services were presented and paid monthly, a claim for demurrage on account of the detention of a barge will not be allowed when presented until after the death of the testator and more than a year after the service was rendered and the bill therefor paid, in which no claim was made, although such claim was warranted by the terms of the bill of lading. Hagan vs. Tucker's Ex'x, 112 Fed. Rep. (U. S.) 546.

Liability of Assured to Underwriter for Premiums—Broker's Relation to Parties.—In the absence of proof of the existence of a usage, such as prevails in England, that a marine insurance broker who procures a policy of insurance for a client is alone liable to the underwriter for payment of the premium thereon, and must himself look to the assured, the ordinary rule governs in this country, and the assured becomes the debtor of the underwriter for such premiums. Mannheim Ins. Co., vs. Hollander, 112 Fed. Rep. (U. S.) 549.

Charter Party—Return of Yacht.—An absolute obligation to return a yacht at the expiration of the term of hiring is imposed upon the charterer, failure to comply with which is not excused because the vessel is lost without fault on his part, by a charter party which, after providing for the surrender of the vessel at the expiration of the term "in as good condition as at the start, fair wear and tear from reasonable and proper use only excepted," and requiring the hirer to make all repairs and assume liability for all losses and damages, fixes in express terms the value of the vessel, and makes provision for security to protect against any loss or damage sustained by a failure of the hirer to fulfill any of the obligations which the contract imposes. Sun Printing & Publishing Co. vs. Moore, 22 Sup. Ct. Rep. (U. S.) 240.

Loss of Raft—Temporary Abandonment.—A steamship engaged to tow a large raft of timber from Puget Sound to San Francisco, and when within two days' sail of the latter port the hawser parted, and the tow went adrift. A strong wind was blowing, and the sea was so rough as to make it unsafe, in the judgment of the master, to attempt to recover it at the time, or to remain near it during the night; and he was also of the opinion that he could not keep it in sight if he remained, and would lose his bearings. Under such circumstances he proceeded to a port, where he communicated with his owners, and on the next morning and for two days following he searched for the raft, but, owing to fog, was unable to find it. It was recovered three weeks later by another vessel, 450 miles southwest of San Francisco, and brought in, but in a damaged condition. Held, that as it did not appear that the master erred in his judgment or that he could have kept the raft in sight and recovered it if he had remained in the vicinity, his action in leaving it was not such negligence as rendered the steamer liable for the damages sustained by its owners. The Czarina, 112 Fed. Rep. (U. S.) 541.

Evidence Considered.—Respondent's testator was engaged in mining and selling coal, largely marketed in Philadelphia, and in the conduct of his business there he employed barges of libelant in lighterage service. Later he extended his business to New York, and on his promise, which was kept, to give libelant his own lighterange business there, and such other as he could influence, libelant sent a number of barges to New York. In the usual course of trade there, coal intended for steamships lies in barges at a wharf awaiting transfer or sale, and some of libelant's barges so employed by decedent were delayed before the coal was delivered, which was a usual and necessary circumstance in the business. Monthly bills for the use of the barges were presented and paid, no claim being made therein on account of such delays. Neither did the bills of lading used make provision for such payment. After decedent's death, libelant made a large claim for damages on account of such delays. Held that, in the absence of clear evidence of a contract to pay for such detention, it must be presumed that libelant assumed the risk of such delays as a known incident of the employment, and that he was not entitled to recover. Hagen vs. Tucker's Ex'x, 112 Fed. Rep. 546.

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CLEVELAND, O., MARCH 6, 1902.

FRYE SHIPPING BILL.

The Senate on Monday began consideration of what is popularly known as the shipping bill—a measure to provide for ocean mail service between the United States and foreign ports and the common defense; to promote commerce and to encourage deep sea fisheries. Mr. Frye (Maine), chairman of the Committee on Commerce, made the opening statement in support of the bill. He occupied the floor for nearly two hours.

He said it seemed to him that the policy of protection had been vastly beneficial to the American people. Only one industry had been without protection—and without protection for fifty years— and with the logical result. The shipping interests of the country had been neglected in the giving of protection. With a sea coast boundless, with enormous deposits of iron and coal, with the most sagacious business men in the world, with the advantage of every natural resource upon the side of the United States, this country has permitted its inferiors to seize upon the pathways of ocean commerce almost without a struggle.

"It seems to me," said Mr. Frye, "that that picture ought to humilitate and mortify beyond expression any patriotic citizen of the United States who glories in the power and prosperity of his country. It is not alone humiliating—it is absolutely dangerous."

Mr. Frye asked who was going to carry the $487,000,000 of exports in the event of a war between Germany and Great Britain. "Why," said he, "the farmers and the manufacturers and the wage-earners of the United States would pay a penalty equal to that paid by either of the contending parties."

Mr. Frye then sought to show that this condition of things was caused by American wages, which increased the cost of our ships, for the foreign trade at least 25 per cent. He declared that of all steamships in the world of fourteen knots and upward, 80 per cent. are subsidized by the countries whose flags they carry. Of sixteen knots and upward, he said, all but six in the world are heavily subsidized by the countries whose flags they float. The nations paying these subsidies, he declared, did so for the purpose of extending their trade and for nothing else. "Trade cannot precede the mail," said he, "the mail must precede the trade.

LAKE WAGES.

Delegations from the Longshoremen's Association along the Great Lakes will assemble in Cleveland March 10 for the purpose of fixing the scale of wages for the coming season. The meeting is expected to be one of more than ordinary importance, in that the scale will be fixed not only for the busy season of navigation, but for whatever work is to be done next winter.

The longshoremen will assemble on March 10 and continue in session until March 12, when a meeting with the Dock Managers' Association has been arranged for the purpose of presenting the results of the convention. None of the local officials or President Walsh believe that there will be any trouble between the two associations, although it is generally understood that the sentiment will probably be for a slight raise over wages paid last season.

James T. Walsh, whose position as president of the international association takes him to every port along the lakes, said:

"The dock managers and the longshoremen maintain most friendly relations and the feeling between them was never more prophetic of a harmonious season, with none or little friction in regard to conditions and wages. Such a condition augers well not only for the men, but for the employers, whose interests are at stake.

"From any point of view the outlook for the coming season is exceptionally bright, I believe that every man in the organization will be enabled to have all the work he wants and at good wages. The general run of trade will probably be the best for years.

"The organization is in a particularly prosperous condition and controls the situation. I don't believe that there will be a non-union dock worker or engineer employed at any port on the lakes this season. The situation as regards freight handlers is somewhat different, although the organization is making gains. The union at present does not compare in strength with that of the longshoremen, but efforts will be made to increase the field of its usefulness and secure more recognition for it."

IMPROVEMENTS AT THE "SOO."

Canadian marine interests centering at Sault Ste. Marie will have a season of great development, according to the plans of the Clergue syndicate. Both the vessel service and the iron mines will be energetically pushed.

In connection with the Algoma Central the syndicate will have two boats running between Toledo and the "Soo." One will be a side-wheeler, which will be called the King Edward, and the other will be the Ossifrage. Each boat will make a trip a week. The Minnie M will be kept in service between the "Soo" and Michipicoten. The syndicate also has in mind establishing a passenger route between the "Soo" and Port Arthur. It may, however, not be able to obtain suitable boats, in which case this route will not be opened the coming season of navigation. It seems certain that the Clergue syndicate will not build any boats in the immediate future. It has about all the enterprises on hand now that it can carry.

About 1,000,000 tons of iron ore will be moved from Michipicoten to Lake Erie ports the coming season. This entire output has already been sold. In addition to the four steamers and two barges that carried Michipicoten ore last season, the Clergue people have chartered 16,000 tons of additional tonnage. The names of the vessels secured are not yet given out, as there are yet some details of the charter to be completed.

The Clergue blast furnace at the Canadian "Soo" will not be ready for operation until late in the fall, and little attention will be paid to getting iron ore down for its use by boat this year, as by the time the furnace is in operation it is expected that the Clergue railroad will reach the mines and the ore can be brought down in winter for local use.

The Clergue made its first run of steel ingots last week, and it is expected that the plant will be rolling rails in sixty or ninety days.

Settlement—Release of Claim for Wages—Effect in Admiralty.—Contracts by men to navigate a vessel to and from Alaska, and while there to work as fishermen during the season for taking and canning salmon, are not, strictly speaking, for the performance of services as seamen, and are not within the provisions of Rev. St. § 4552, which make releases executed as therein provided on settlement with seamen conclusive on the parties; and where such men, on their return are offered less than they were legally entitled to receive under their contract, and were impelled by their necessities to accept the same, and to sign releases in full, which they did under protest, a court of admiralty will not hold them concluded by such releases, although they were signed with full knowledge of their terms. Domenico et al., vs. Alaska Packers' Ass'n. 112 Fed. Rep. (U. S.) 554.

NEW CLASSIFICATION.

The underwriters doing business on the Great Lakes have decided to give class B1 boats another chance, and contrary to well defined reports circulated before the meeting in Buffalo last Wednesday, the low class lumber carriers will not be ruled out altogether, but will be insured, although at a rate about 25 per cent. higher than that which prevailed last year.

Many matters which came up at the meeting of the Inland Lloyds agents at Buffalo, have not yet been determined, having been placed in the hands of committees for action, but it was learned that several radical changes will be made as regarding lumber carriers upon which the underwriters lost large sums of money during the past few years.

In the first place an effort will be made to regulate the height of deck loads allowed to each carrier, and the insurance representatives are now trving to arrive at some basis upon which to work. Each boat will be given a specific maximum height to which it can load upon its decks, in this way, the intention being to establish a safe load line.

Another important step will be, if possible, to relieve the underwriters from all liability caused by leaks in class B1 boats, it being claimed that owners have loaded so heavily that the seams have opened and caused the vessels to waterlog or break apart.

The line will also be drawn very closely on boats of higher classification. The underwriters claim that the reason for the changes is that the past few seasons have been full of heavy losses for them and that an effort will be made to even matters.

Owners of lumber tonnage will, on account of action of the insurance companies, have to be more careful in chartering their vessels, as they cannot figure on loads as large as heretofore. The carrying rate, however, will of necessity be higher on account of the smaller loads and the large increase in insurance charges for low class vessels.

ICE REPORT.

The Weather Bureau has sent out the following ice report:

"The reports of the ice condition from the regular and display stations of the Weather Bureau on the Great Lakes indicate that on Superior the harbors are generally frozen over, while there is but little ice reported in the lake, at least over the western and central portions. The reports from Lake Michigan indicate that there is but little field ice so far, and that Green Bay is frozen over with ice ranging from fourteen to twenty inches in thickness. At the Straits the ice is reduced to about sixteen inches, and is heavily windrowed on the west side, but on the whole much less ice than usual. On lake Huron there appears but little field ice, and the lake is practically clear on the west side. In Lake St. Clair the ice is gradually breaking up and passing down the river, and the St. Clair and Detroit rivers are about free of ice. In Lake Erie there is less ice reported than usual at this season of the year; the harbors are nearly free of ice, or the ice is broken up so that it will move out as soon as the field ice moves off the shore; the field ice is reported along the south shore from Buffalo to Sandusky, but is not heavy. The ice in Lake Ontario appears to be confined to the eastern end of the lake. In comparison with the same period last season there is much less ice reported from all the lakes this season than last, and there is much less field ice; this indicates an early opening of navigation."

THE NORTHERN NAVIGATION CO.

One of the largest stockholders of the Northern Navigation Co., confirmed the report that that company had acquired all the stock of the North-West Transportation Co. Last year the Northern company secured a controlling interest in the Sarnia firm popularly known as the Beatty Line, and it has proved so satisfactory that the company took steps to acquire the balance of the stock. It is understood that the Beattys who have for so long been connected with the marine interests of the upper lakes, have now disposed of all their stock, which they held in different transportation companies. By this amalgamation the Northern Navigation Co. will practically have control of the Canadian tourist trade of the upper lakes. From Sarnia the steamers Monarch and United Empire, and the new steel steamer Huronic will ply to Port Arthur and Duluth, making connections at Sault Ste. Marie with the steamers sailing out of Collingwood. It is probable that the lines will be managed from Collingwood, but, this has not been definitely decided upon.

BUFFALO.

Special Correspondence to The Marine Record.

H. S. Fisher, general agent of the Cleveland & Buffalo Transit Co., accompanied by Mrs. Fisher, departed last night for New York on a pleasure trip. They will be absent for a week.

An attempt was made this week to move the steamer John Pridgeon, Jr., from the Tifft Farm for the purpose of taking her to Tonawanda, but the ice was so thick in the Blackwell that the attempt was abandoned temporarily.

Work of remodeling the big steamers North West and North Land is progressing, and all the men who can be profitably employed upon them are engaged. The new cabins are set up and both boats are nearly ready for their new boilers.

Manager Lautenslager of the Independent Towing Co., is fitting up larger and more convenient offices and is putting his tugs in fine shape for the coming season's contest with the tug trust. One or two more tugs will probably be added to the line.

Senator Mills has introduced a bill designed to prevent any word, figure, mark, picture, design, drawing, or any advertisement of any nature, upon any flag, standard, color the desecration of the flag of the United States. It provides that any person who shall place, or cause to be placed, or ensign, of the United States, or shall expose or cause to be exposed to public view any such flag, upon which any mark of any kind or which shall have attached thereto any such mark or sign, or who shall publicly mutilate, deface, defile, or defy, trample on, or cast contempt, either by word or act, upon any such flag, standard, color or ensign, shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not exceeding $100, or by imprisonment for not less than thirty days, or both.

The dockage which the Tonawanda Iron & Steel Co. is constructing along the river below Gratwick, will some day become a prominent part of North Tonawanda's busy commercial frontage. It may be many years before the dockage is completed, but when finished it will be one of the finest and most durable in the Tonawandas. Some time ago the Iron and Steel Co. purchased the narrow strip of land, 3,000 yards in length and the riparian rights along the river road north of Felton. A member of the company stated that the purchase was made to provide a place to put the slag not put to some other use, but in the course of fifteen or twenty years he expects to see a dock the entire length of the property and as deep as 900 feet in some places. What use will then be made of the dock the officer said that he has not the slightest idea.

Four workingmen, who were beneath the keel of the big steel steamer William Nottingham when the boat slid into the water on Monday at the Buffalo Drydock Co.'s yards, had a narrow escape from serious, if not fatal, injury, but each managed to get out of harm's way in the nick of time, so the launching was unmarred by accident. Aside from this incident, which was unknown to the hundreds of spectators, the launching was the smoothest and was accomplished with less difficulty than the launching of any of the boats that have been built by the company. Miss Florence Nottingham, a niece of William Nottingham, an attorney of Syracuse, N. Y., in honor of whom the vessel was named, christened the big steamer. She did it gracefully amid the applause of the officers, guests, workmen and spectators. The William Nottingham was to have been launched last Saturday, but the current then was too swift and the water too high in the slip to take chances.

The barge, Bryn Mawr now out of dry-dock, has received some very extensive repairs, including thirty-two plates and over one hundred frames, besides straightening of keel and shoe. Last fall she struck an obstruction just outside the breakwater at the mouth of Buffalo creek. There should be nothing but deep water at that point, but it has been known for some time that something wrong existed, for the steamer Boyce brought up there about two years ago and sustained some damage. Nothing was done about it, however, and it is likely that the Bryn Mawr found the same shoal. It is thought that a cargo of stone was dropped there by some scow, and that the parties upon whom the duty of removing the obstruction would have devolved for that reason found it convenient not to report the matter. The steamer Queen City goes into the dry-dock next for bottom repairs, and after her the Ramapo. Considerable work is in progress on the barge Neilson.

The fleet of Drake & Maytham, of this city, is to be composed of the Chili, Maytham, Vega, Vulcan, Alcona, Alta, Elphicke, and W. L. Brown, with Maytham interested also in the American and Brazil. This is considerably less than the former size, owing to the sale of several of the boats. The firm will not go into contract ore, as there was so much dissatisfaction last season. The rate was never more than was obtained by the wild fleet, and it was often much less. The real cause of complaint was, however, the delays in getting boats loaded and unloaded, and the refusal of the ore companies to make any more satisfactory arrangement. Drake, Bartow & Co., of which Capt. M. M. Drake is also a member, has chartered tonnage for a large amount of its ore on an 80-cent basis, in spite of the ore shippers for a 75-cent rate. The owners of the steamer Chili are putting about $1,500 on her, mostly in the shape of inside woodwork. As a rule the Drake & Maytham fleet requires small repairs.

The steamer William Nottingham, building for the United States Navigating Co., of which Capt. W. W. Brown of Cleveland, is general manager, was launched at the yard of the American Ship Building Co., here on Monday. The ship was christened by Miss Florence A. Nottingham of Syracuse. The launch was scheduled for Saturday, but owing to low water it had to be postponed. The members of the launching party were Mr. and Mrs. William Nottingham, Mr. and Mrs. Edward Nottingham, Mr. and Mrs. George Leonard, Mr. and Mrs. H. W. Smith, Mr. and Mrs. D. E. Petit, Mr. and Mrs. Henry Philips, Mr. and Mrs. Horace S. Wilkinson, Mrs. J. W. Wilson, Miss Wilson, Mrs. Georgia Andrews, Miss Florence Anderson, Miss Ruth Gilbert, Mrs. James Gilbert, Miss L. E. Smith of Syracuse, and Mr. and Mrs. W. W. Brown, of Cleveland. The Nottingham, which is 400 feet over all, 50 feet beam and 28 feet deep, will be ready for business by the opening of navigation. She will be sailed by Capt. C. D. Woodward, who was in the steamer George Presley last season.

The committee on wharves and harbors of the aldermanic board has submitted a report favoring the bonding of the city for $250,000 for the purpose of improving Buffalo harbor as far east as Hamburg street. The report will ask that the corporation counsel be empowered to draft an enabling act for presentation to the legislature to allow the city to issue the bonds, which it is proposed to make redeemable in three years by assessing one-half the expense on the property owners along the river front and the balance to come from the general fund. Several hearings have been held by a special commission appointed some time ago by Major Knight, Capt. Marcus M. Drake and J. J. H. Brown being added to the regular wharves and harbors committee. Many marine men have attended these hearings and the mass of evidence presented showing the need of harbor improvements has finally influenced the report which will be presented. There has been some objection to the proposed improvements from the railroads, owing to the plan of assessing a part of the cost on property owners, but the needs of the case appear to have finally overcome objections and the roads have expressed a willingness to allow the matter to proceed.

DETROIT.

Special Correspondence to The Marine Record.

A new chart, in colors, of Manitou Passage, Lake Michigan, has just been issued and is now on sale at the U. S. Lake Survey Office, 33 Campau building, Detroit, at 15 cents per copy.

A dispatch from Washington says: Contract was awarded to P. M. McChurch of Sault Ste. Marie, Mich., $2,690, for keeping buoys in St. Mary's river and Hay lake channel. A contract was also awarded to Eliphalet A. Gustin of West Bay City, Mich., $223 for keeping buoys on Saginaw river.

A Calumet, Mich., special to the Dispatch says: The Nestor estate of Baraga and Detroit has secured one of the largest tracts of standing timber in the upper peninsula, from D. J. Norton, of Ontonagon. The land consists of 17,000 acres, is located in Ontonagon and adjoining counties and carries 20,000,000 feet of timber. The deal involves $115,000.

U. Grant Grummond brought suit in the admiralty division of the United States district court at Detroit against Abram Smith and others, seeking to recover $1,500 salvage for aid rendered the barge Lady Franklin in 1889. The suit was tried before Judge Swan, who dismissed the libel. Defendants had paid $1,200 to plaintiff for salvage before suit was begun.

Capt. A. E. Stewart returned from Port Huron on Sunday, after having completed the sale of the steamer C. F. Bielman to Henry McMorran of that city. The consideration was $80,000. The Bielman, which measures 307 feet over all, 41 feet beam and 25 feet molded depth, is now at Buffalo, wintering there after delivering the cargo of grain brought down on the last trip.

The following meteorological observations are furnished by the office of the United States Weather Bureau, Detroit, for the week ending, Tuesday, March 4th: Prevailing wind directions for the week, southeast; highest velocity, 40 miles, southwest on February 28th. Mean temperature for the week, 36 degrees; highest temperature, 54 degrees on February 28th; lowest, 24 degrees on March 4th.

Capt. Joseph Shackett, age 63, died of heart trouble Sunday night. He was a charter member of the first shipmasters' association organized on the lakes, and has been captain of steamboats since he was 21 years old, having sailed 42 years without losing a boat, or having any serious accident. He was well known on the lakes and was for many years master of the steam barge Wotan. He leaves a widow and family in Marine City.

Messrs. A. A. and B. W. Parker of Detroit have now disposed of their entire holdings of freight tonnage, the last boat being sold Tuesday when the steamer John Oades became the property of the C. Reiss Coal Co. The Parkers some time ago declared their intention to get out of the freight carying business and devote their entire time and attention to the White Star line. From time to time they have sold the freight boats they owned or controlled. Within the past two months the Pridgeon, Blanchard, Oades, Favorite and Saginaw have changed hands. It is understood that the Oades will carry salt from Port Huron to Manitowoc and Milwaukee and occasionally go into the coal business.

George E. Fairbairn, who for the past twelve years has been chief in the local office of supervising inspector of steam vessels, has been promoted, in line of civil service, from that position to chief clerk in the rivers and harbor work recently transferred from Major Fisk to Capt. Beach, light-house engineer for the eleventh district. The new work is under the War Department and relates to the improvement of rivers and harbors on the west shore of Lake Huron and takes in Clinton river, River Rouge and the defensive work at Fort Wayne. Harry B. Lockwood, a newsparer man, late of the Buffalo Evening News, succeeds Mr. Fairbairn as chief clerk to Supervising Inspector C. H. Westcott. He assumed his new duties Saturday. Mr. Fairbairn has been in his new position for nearly a week.

Reports have come to members of Detroit lodge No. 7 of the Shipmasters' Association that there has been a marked increase in the number of masters' and pilots' licenses issued by the inspectors of hulls and boilers at the different lake ports this season. The Detroit Tribune says: One rumor affirmed that the increase of licenses issued was due to the activity of different vessel owners, who, in view of the supposed agitation for the establishment of a Shipmasters' Protective Association, were getting a lot of new and young men, who could be drawn upon in case of dissatisfaction with the terms requested by the older masters, or in the event of the formation of a protective association, and the consequent demand for higher wages. It was reported that one prominent Cleveland vessel owner had attached his signature to no less than twenty-five applications for licenses. It was thought by some that many of these candidates were coming to Detroit to secure their licenses, it being claimed that the examinations given by the local inspectors are in some respects easier than at Cleveland. J. H. Galway and Capt. J. E. Cottrell, United States inspectors of hulls and boilers at Detroit say they have noticed no increase in the number of applications for licenses this season over those of previous years. The issue of original and raised licenses they say may fall short of the number issued last season. They have, however, had many requests for renewals of five-year licenses, but these requests must necessarily come from masters who have already served at least five years, and could not be counted as new men.

At a recent meeting of the Retail Lumber Dealers in Detroit, Geo. W. Hotchkins said: "In speaking of the development of the lumber business our thoughts naturally turn to the period embraced since about 1830 to 1840. It is well authenticated, however, that as early as 1690 a saw mill was erected on Bunce Creek, in St. Clair county, and that 90 years later, in 1780, Enos Morass built a second mill upon the same site. In 1809 Meldrun & Park built a mill at the mouth of a creek below Marysville, and Enos Morass erected one at Abbotsford in 1816, while so early as 1811 Enos Morass lumbered and had a saw mill on Black river, and from the contiguous forests contracted to deliver lumber and spars to the United States authorities at Detroit. For many years the St. Clair river was the most important seat of lumbering operations in the west. In 1832 Dr. Justin Rice built a steam saw mill at Port Huron and he was the first to utilize sawdust as fuel under a boiler, so far as is known."

For many years the name of Frank E. Kirby has been synonomous of invention, and the very best in the ways of marine construction, but his latest design, a life-boat, upon entirely new lines, new in method of construction and design, promises to add new laurels to those which already belong to him, the Detroit Free Press says. Mr. Kirby has been at work for a long time, devising a model for a life-boat which would be absolutely unsinkable, self-righting, light in construction and buoyant. He has what he has been seeking and the first boat will be turned out by the Michigan Steel Boat & Power Co. within a few days, and a thorough test will be given it. The new life-boats will be placed upon the steamers Eastern States and Western States of the new Detroit and Buffalo line. Each steamer will be equipped with ten boats, eight of them 24 feet long, 7 feet wide and 3 feet deep, and two will be 20 feet long, 6½ feet wide and 2½ feet deep. The larger boats will have a capacity of thirty persons and the smaller twenty persons.

F. H. Walker, president of the Lake Erie & Detroit River railroad, announced at the close of a meeting of the directors in London, Ont., yesterday afternoon that as a result of the indifference shown by the directors of the London & Port Stanley Line in connection with their signing of the proposed extended lease of their road to the Lake Erie line, the latter had decided to discontinue the use of the Port Stanley line for the purpose of handling the coal that is brought to Canada from Conneaut, O. "Our present lease of the Port Stanley line does not expire for twelve years," said Mr. Walker, "but we are in need of improved facilities for handling the coal on its arrival from Ohio, and as we intend to erect a $50,00 hoist to unload the coal from the vessels we concluded that it would be unwise to place the hoist at Port Stanley, a point that we may use for only twelve years. We wanted the lease extended for thirty. The hoist will be built at Rondeau, one of our Lake Erie terminals in Kent county, and our coal will now come this way instead of Port Stanley."

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from 80 to 365 days and nights without attention, and can be seen a distance of six miles. . . . . .

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FLOATING DRY DOCK.

The largest floating dock ever constructed has just been completed by the firm of Messrs. Swan and Hunter, England.

The dock has been constructed to the order of the British Admiralty, and is intended to replace the old dock at Bermuda, which has been stationed there since 1869. The new dock, which is of the type known as a floating graving dock, has been built from the plans of the inventors, Messrs. Clarke and Standfield, and possesses a length of 545 feet, with a clear width at entrance of 100 feet between rubbing fenders. The lifting power is 15,500 tons, but this can be increased to 17,500 tons, and the walls are of sufficient height to allow a vessel drawing 32 feet to be taken on 3 feet 6 inch keel blocks. The dock consists of five pontoons, three of which form the main lifting portion, and two sides. The center pontoon is 300 feet in length, the end ones being 120 feet long.

The side walls are 435 feet long by 53 feet 3 inches high, and are pierced with two gangway openings to admit light and air into the interior. The pontoons are divided into 40 pumping divisions, 32 of which are absolutely watertight and distinct. There are four 18 inch centrifugal pumps in each wall, and any one of them can empty all the compartments of its own half of the dock.

An electric light installation, with its own generating plant, is provided in one wall for lighting all the interior compartment of the dock, and in addition twelve arc lamps are carried on gallows on top of the towers which light up, when required, the whole dock and ship, whilst further mains are led along the dock's sides from which hand-lamps may be taken off to light up any particular spot where special work is being carried on.

Electricity is also utilized as the driving power for the traveling and swinging cranes, which run the whole length of each wall. They are of 5-ton lifting power with a jib radius of 36 feet. A complete drainage service, communicating with all the dock compartments and capable of emptying them completely, is installed in each wall, and by the alteration of a coupling, this service can also be used as a washing-down service, by menas of which the outside of the ships on the dock can be washed down, or the inside tanks tested with water. As it is possible that at low water the dock may, to a certain extent, sit upon the rough coral bottom of the harbor where she will be moored, the bottom of the pontoons is protected by a series of bilge-keels of greenheart. The top decks of the walls are planked with teak with water-way all round, and arrangements are made, in view of the scarcity of fresh water at Bermuda, for catching and running into the reserve water tanks inside walls, all rain-water falling on these decks.

MARINE PATENTS ISSUED.

693,369.—Wave motor. William S. Bryant, Cohasset, Mass.

693,600.—Steam pile driver. Johannes Grapengeter, Hamburg, Germanv.

693,615.—Swimming appliance. Ferdinand Minkus, New York, N. Y.

693,855.—Apparatus for preventing collisions at sea. Nicolas Gherassimoff, St. Petersburg, Russia.

693,996.—Life-saving suit. Herrman M. Brand, Porto Alegre, Brazil.

694,193.—Means for automatically balancing submarine boats. John P. Holland, Newark, N. J.

694,154.—Submarine boat or vessel. John P. Holland, Newark, N. J.

694,214.—Self leveling and adjusting berth for ships. Camille St. Hilaire, Wilson, Mich.

694,242.—Wave or tide motor. William Borchert, Carson City, Nev., assignor of one-half to Reuben J. Kelly and Richard K. Kirman, same place.

694,274.—Bouyant propeller, Bernedott T. Herold, Vallejo, Cal.

MARINTIME LAWS.

The laws of admiralty are of very ancient origin, and antedate really all known laws at present in force in the civilized world. The first mention that we find of any regular, recognized maritime code of sea laws reaches far back into misty antiquity. We know that the Rhodians had such a code about 900 before Christ, and we know also that the Phœnicians had a set of regular sea laws. Coming down to more recent times, the following are the principal maritime codes with time of their enactments:

940—The maritime law of Norway.
1063—The maritime law of the Two Sicilies.
1117—Maritime law of Iceland.
1150—Maritime law of Denmark.
1158—Maritime law of Lubeck.
1160—Maritime law of Florence and Pisa.
1224—Maritime law of the Prussian States
1232—Maritime law of Venice and Austria.
1243—Maritime law of Catalonia, Aragon, Valencia and Majorica.
1245—Maritime law of Sweden.
1270—Maritime law of Hamburg.
1270—Maritime law of Russia.
1303—Maritime law of Bremen.
1303—Maritime law of the Papal States.
1316—Maritime law of Genoa.
1350—Maritime laws of Wisby and Gothland.
1485—The laws of Oleron.
1539—La consulat de la mer, Venice.
1550—La guidan de la mer, France.
1597—The laws of the Hunsealic League.
1606—Maritime law of Sardinia.

Thus all maritime nations of the world have aided in building up the present admiralty law, which has now become a subject of international importance. The fundamental principles are the same in all countries, though the application of the law may vary according to the rules and regulations of local tribunals by being modified or even changed by statutory enactments.

STATEMENT OF THE VISIBLE SUPPLY OF GRAIN.

As compiled by George F. Stone, Secretary Chicago Board of Trade March 1.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels
Buffalo	2,819,000	369,000	332,000	2,000	690,000
" afloat	361,000	84,000	.....	.....	.....
Chicago.	6,623,000	4,456,000	461,000	1,010,000	169,000
" afloat	417,000	.....	.....	77,000	.....
Detroit	314,000	146,000	34,000	96,000	24,000
Duluth	12,349,000	141,000	170 00	456,000	308,000
" afloat	511,000	.....	.....	.....	.....
Fort William, Ont.	4,470,000	.....	.....	.....	.....
Milwaukee	509 000	174,000	371,000	34,000	177 000
Minneapolis	15,966,000	89 000	172,000	44,000	77,000
Montreal	46,000	13,000	208,000	22,000	55,000
Port Arthur, Ont.	270,000	.....	.....	.....	.....
Toledo	71,000	896,000	562,000	177,000	.....
Toronto	45,000	.....	16,000	.....	48,000
On Canals	46,000	3,000	112,000	37,000	50,000
Grand Total	54,093 000	10,333 000	4,246,000	2,193,000	2,038,000
Corresponding Date, 1901	57,234,000	19,764,000	10,550,000	1,163,000	1 530,000
Increase for week	.....	.....	182,000	.....	.....
Decrease " "	292,000	456,000	.....	65 000	78,000

While the stock of grain at lake ports only is here given, the total shows the figure for the entire country except the Pacific Slope.

THE work of constructing the interurban railway between Seattle and Tacoma, Wash., is progressing rapidly, and will be open for traffic about July 1. Outside the limits of the two cities the road has been located on private right of way, and the system of transmission will be by rail. The company is paying particular attention to its fences, which are being made extra strong.

THEORIES AS TO THE ORIGIN OF BITUMINOUS COAL.

The geological world has been divided for years into two camps upon the subject of coal formation. Advocates of the "growth in place" theory maintain that coal was formed from the debris of vast forests growing in swampy grounds in districts which were in a constant state of subsidence. That new giants of the forest took root and flourished upon the remains of those which had previously fallen and decayed away, and that an occasional inundation of water carrying detritus from the neighboring uplands was sufficient to explain the interlarding of the coal measures with beds of grit or sandstone. Others attribute the vast accumulation of vegetable matter, which in a consolidated form has become coal to the action of rivers in transporting large trees from the interior of a prehistoric sea coast, where, becoming water logged, they formed a thick deposit of vegetable matter upon the sea floor. Mr. A. Strahan, of His Majesty's Geological survey, has never accepted either of these theories "in toto." He has always argued that coal was formed by sedimentation of vegetable matter, and that the evidence is not conclusive that the forests gave rise to coal seams in the place of their growth. In support of this he mentions the interesting fact that, while the trunks of trees are found in the underlying sandstone, they are not found in coal itself. He suggests that the general sequence of events preceding the deposition of a normal coal seam was (1) the outspreading of sand or gravel with drifted plant remains, followed by shale as the currents lost velocity; (2) the gradual retreat of the water, leaving the surface open to the air; (3) the deposition of very fine sediments; (4) the rooting of a mass of vegetation in the deposit so formed, in which mass were caught wind-borne vegetable dust and floating vegetation. Recent investigations of Mr. Strahan very materially substantiate the theory. He has found an example of a pure coal shading off into pure dolomite, which, in the circumstances, can only have been formed under water. Hence it follows that the coal which lies side by side with the dolomite must have been laid down under the same conditions. Dolomite can be formed in other ways. Why should dame nature in prehistoric ages have possessed that fickleness which is today charisteristic of her sex, and have varied from time to time her method of storing the black mineral to which we now owe so much? Hundreds of geological wonders are capable of more than one explanation, yet the geologists cling tenaciously to some theory which accounts for the greater majority of instances which come before their notice. Those who can clear their minds of scientific basis will be glad to admit Mr. Strahan's theory as explaining the formation of some of our coal seams, To admit all seams were formed in this way would be as chimerical as to refuse to adopt any part of Mr. Strahan's argument.

EDUCATIONAL FEATURES IN THE WORLD'S WORK.

There is an unusual amount of interesting discussion of varied educational matters and comment upon striking personalities in the educational field in the World's Work for March. A number of editorials touch upon educational topics. Longer articles that will attract college and school people are Prof. Hill's description of the American Desert, Dr. See's story of an Astronomer's Night's Work; Theodore Water's article about Prof. Hallock's experiments with the earth's interior heat. The career and personality of Dr. W. H. Maxwell, the Superintendent of Greater New York's schools, furnish a model for school superintendents the country over, and Dr. E. C. Branson's description of the work the Atlanta State Normal School is doing to solve the Real Southern Problem is a significant contribution to the general knowledge of Southern educational conditions. Full-page portraits of Dr. Maxwell, Nicholas Murray Butler, the new President of Columbia, and Dr. Remsen, the new president of Johns Hopkins, will interest educators.

WIRELESS TELEGRAPHY FOR THE NAVY.

In the course of his statement before the House Committee on Naval Affairs, Rear Admiral R. B. Bradford, Chief, Bureau of Equipment, U. S. A., strongly urged the installation of apparatus for wireless telegraphy on some of the ships of the Navy for purposes of instruction. Ships of all the Eupopean navies are being equipped with this apparatus, says Admiral Bradford, and so, to some extent, are those of the small navies of the South American countries. It is time, therefore, that some of our warships should be similarly provided. The cost of this apparatus is not great, a complete set sufficient to provide one station with both transmitting and receiving appliances being procurable for about $1,500.

As yet, says Admiral Bradford, the field of usefulness for wireless telegraphy is essentially on the sea, and it is doubtful if it will be of much service on land. The apparatus is by no means perfect. It will not work in very hot weather; why, is not fully known. After the heat of the day is past, however, messages are transmitted without difficulty. Messages can be sent during fog and bad weather. As a matter of fact the transmission of messages is facilitated by the presence of a fog. Cold weather does not seem to interfere with its use. Communication, however, is, as a rule, entirely interrupted during the prevalence of thunder storms.

The popular idea that wireless telegraphy is entirely the invention of Mr. Marconi, and that he has a monopoly of effective appliances is an error. Apparatus is made by two firms in Germany, by two in France, and by one—Marconi's— in England. The English and Italian navies use the Marconi apparatus, the French and Russian navies use a French apparatus, and the German Navy a German apparatus. It will be readily understood what a great advantage this system is at sea when it is stated that it enables a ship to report her location and condition or ask for assistance from other ships many miles away, (probably at least 60 to 100) without difficulty.

Messages can be transmitted over the sea with much more facilty than over the land, and probably about twice as far. The range of this apparatus for intelligible signals is at present unknown. It is being increased by the use of more powerful appliances.

To illustrate the military value of wireless telegraphy, says Admiral Bradford, "suppose a flagship is anchored in Habana Harbor, with lookout vessels stretched across Florida channel, or across the Yucatan channel, or the entrance to the Gulf of Mexico, or all three combined; she may then receive reports at will of any suspicious circumstance, the approach of a hostile fleet, or any other information necessary for effective action."

Admiral Bradford concluded his statement on this subject with a technical description of the practical operation of the wireless telegraph system.

WATER TUBE BOILERS.

The British Royal United Service Institution translates an article on the water-tube boiler question in the German navy from the Marine Rundschau. The article considers that the origin of the water-tube boiler was due in the main to the necessity for saving weight in the boiler installation, which could only be obtained by substituting water-tubes for the heavy cylindrical and locomotive types previously in use.

Other advantages of water-tube boilers are ability to raise steam quickly, facility in changing the speed, facility in erecting and taking to pieces, and diminution of the danger of explosion. On the other hand, the disadvantages of water-tube boilers are said to be the necessity for regular feeding, for regular stoking, and for keeping water surfaces perfectly clean, as well as the difficulty of cleaning them. Having found that the advantages overbalanced everything that could be said in their disfavor, the question arose as to what type of boiler should be adopted. The writer tells us why some were rejected and how trials were made with those which appeared to merit consideration. The types selected for commendation are the Schulz small tube boilers and the Durr boiler, the former for use in small vessels and the latter in large cruisers, while a combination of cylindrical and schulz boilers is recommended for battleships.

THEORY OF A SHIP'S RESISTANCE

"Tubes With Sides and Without, in Ship Resistance," by Mr. Marston Niles, formerly of the Navy, appears in the Scientific American Supplement of Feb. 1. The object of the paper is to show that the equipressure doctrine of fluid resistance cannot be brought into hydrodynamics, except in hydraulics or in conditions purely theoretical. The equations of hydrostatics are based on the principles that the mutual action of two adjacent elements of fluid is normal to the surface which separates them, and the pressure is equal in all directions, and experiment has justified the assumption of these principles. The same assumptions are made in hydrodynamics, but as this article is intended to prove, they have not been justified by experiment, and as has been said by Sir George Stokes, "The verification of our fundamental assumption in the case of a fluid at rest does not at all prove it to be true in the case of a fluid in motion, except in the very limited case of a fluid moving as a solid."

The assumption of equipressure in fluid dynamics Mr. Niles believes to be "The unsuspected but potent sire of the whole set of monstrous misconceptions and nugatory or abortive calculations." Equipressure in all directions is the fundamental principle of fluid non-motion, i e., of hydrostatics. Non-equality among the pressures must in fact be reckoned the fundamental principle in dynamics of a fluid in motion.

It is suggested that in the matter of the course of fluid particles cleft by the bow of a boat, the theory of their motion has been affected by their apparent course to the eye, and is founded on an optical illusion. Depicted on the eye of a landsman stationed aboard the moving vessel, the particle appears to pass along a course which is really the resultant of two motions; only one of which, however, belongs really to the particle; the other is only an appearance. While the bow is crowding the particle a distance westward, for example, the observer himself is being carried a distance northward; and this widening of the distance between him and the particle seems to be the result of a movement of the particle to the southward, and thus he mistakes the curve, one of whose components is his journey, for the genuine path of the particle. As a matter of fact the particle is acutally pushed forward by the ship and instead of making a southwesterly course, will be found at a point north of that, having been sent seemingly farther forward than the ship's side which furthered it. In all cases, the northward transportation of the particle will vary as the sine or half the bow-angle.

ONE of the five submarine boats built at Barrow, for the British Admiralty was put through further trials recently, had a trial speed on the surface, and had no difficulty in doing over ten miles an hour. She lies very low in the water, and can scarcely be discerned half a mile away. Everything apparently worked very smoothly. A new type of submarine ordered by the Admiralty from Messrs. Vickers, Sons and Maxim, is to be 100 feet long—37 feet longer than the other five—and will embrace some new departures in design and construction based on the experiments already made. She is to be ready and in working order to form one of the features of the Coronation naval review.

WINTER MOORINGS.

A 32-page booklet showing where about 2,000 vessels are laid up for the winter. It gives steamers, schooners and barges and a list of tugs as well as a list of the vessels which were lost last season and is quite reliable, being taken from correspondence at the various lake ports. Copies sent by mail prepaid on receipt of 25c. The MARINE RECORD Publishing Co., Western Reserve Bldg., Cleveland, Ohio.

SOUNDINGS BY THE DOLPHIN.

Some remarkable results were obtained recently with the Dolphin. The Army and Navy Register states that soundings reported under date of January 20, 1902, by the commanding officers of the Dolphin, are in the depressed area north of Porto Rico, which was discovered by Lieutenant Commander Brownson, U. S. Navy, in the U. S. C. S. Blake in 1882. The deepest sounding that he obtained was 4,561 fathoms in latitude 19 degrees 39 minutes north, longitude 60 degrees 26 minutes west of Greenwich. This is considerably exceeded in depth by the sounding 4,662 fathoms which was measured by the Dolphin in latitude 19 degrees 35 minutes north, longitude 67 degrees 43 minutes west, or about 70 miles westward of the position of the greatest previously discovered depth in the North Atlantic Ocean.

Other deep soundings taken by the Dolphin to the southeastward of Navidad Bank are of value in determining the limits of the extreme depression in which these deepest soundings lie.

It may be of interest to compare the depth ascertained by the Dolphin with the deepest soundings that have been measured in other parts of the world. The deepest sounding in the Caribbean Sea lies south of Great Cayman in latitude 19 degrees 1 minute north, longitude 81 degrees 2 minutes west, and there is 3,428 fathoms.

The deepest known place in the South Atlantic Ocean is a spot of 4,030 fathoms lying 11 miles south of the Equator on the meridian 18 degrees 15 minutes west of Greenwich.

The most depressed portion of the crust of the earth that has been discovered up to this time is in the North Pacific, and was developed by Lieutenant Commander H. M. Hodges, U S. Navy, in the U. S. S. Nero, who measured a depth of 5,269 fathoms in 12 degrees 43 minutes north, 145 degrees 49 minutes east, besides numerous other excessive depths in the same general locality.

This depression is nearly equaled in depth by an area lying a short distance east of the Kermadec Islands in the South Pacific ocean, in which H. M. S. Penguin measured a depth of 5,142 fathoms in 1895. The deepest place in the Indian ocean is in latitude 11 degrees 22 minutes south; longitude 116 degrees 50 minutes east, where 3,293 fathoms have been found. In the Antarctic regions the greatest sounding is 1,995 fathoms, found in 62 degrees 22 minutes south, 95 degrees 44 minutes east. In the Arctic a depth of 2,650 fathoms was measured in 1858, in latitude 78 degrees 5 minutes north, 2 degrees 30 minutes west, by the German government ship Sophia.

THE British Army and Navy Gazette reports that a new turbine torpedo-destroyer of the Viper class is being constructed at Wallsend-on-Tyne, by the Parsons Marine Steam Turbine Co., on their own initative, as in the case of the Cobra, which was purchased only after very satisfactory speed trials. The new destroyer is to be about the same size as the Viper, but a certain number of improvements will be introduced, the chief of which is directed to secure fuel economy. She will have the same speed as the vessel lost off Alderney last summer—34½ knots.

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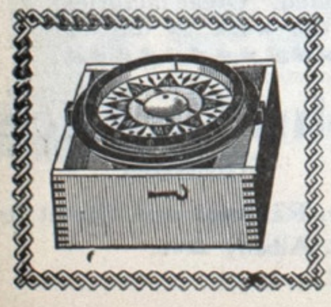

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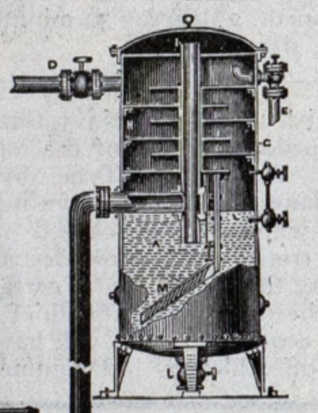

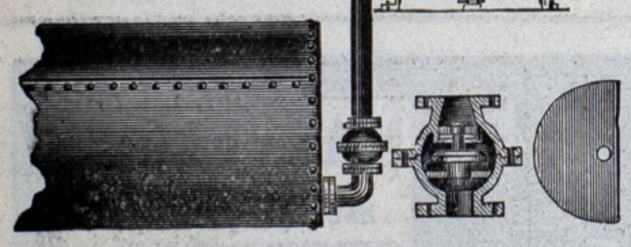

NAMES OF STEAMERS ON THE LAKES USING THE BUFFALO FEED WATER HEATER AND PURIFIER:

Zenith Transit Co.'s steamers Empire City, Crescent City, Zenith City, Superior City, Queen City, Pennsylvania and John W. Gates.

The Republic Iron Co 's steamers America, Brazil, Thomas Maytham and Chili.

Mitchell Transportation Co.'s steamer Hendrick S. Holden.

Minnesota Iron Co.'s steamer Presque Isle.

American Steel Barge Co.'s steamer Alex. McDougall.

Lake Michigan & Lake Superior Transportation Co.'s steamer Manitou.

Bessemer Steamship Co.'s steamers S. F. B. Morse and Douglas Houghton.

American Transportation Co.'s steamers John Harper and Alex. Nimick.

Red Star Line's steamers Robert Mills and Wyoming.

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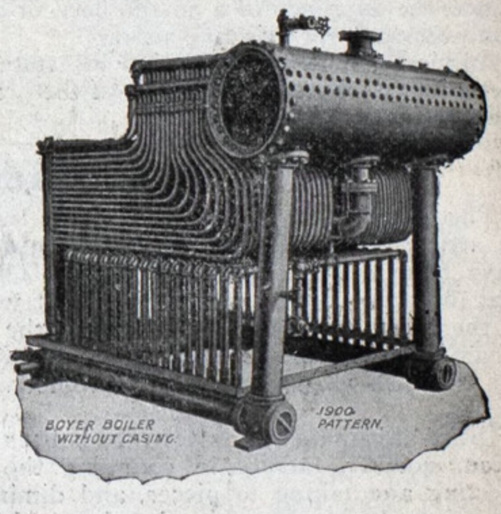

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WIRELESS WEATHER WARNING.

"Electrograph" is the name given by Prof. Lancetta of the Royal Technical Institute, Girgentit, Sicily, to his device for recording distances of atmospheric electricity, such as thunder storms. It is based on the wireless telegraphy, and consists of an exposed conductor, or antenna, connected to earth through a "coherer, which is affected by the atmospheric electric disturbances, and works a recording apparatus, which is made up of a bell and a revolving clock dial, having a pencil to mark the disturbances on a sheet of paper covering the dial.

A lightning flash, for instances, announces itself by ringing the bell for a time depending on the duration of the flash. The hammer of the bell in its recoil also taps the coherer to decohere it. The pencil marks a dot on the dial at the beginning of the flash. An observer winds up the clock every twenty-four hours, and makes a note of the indications on the dial, and changes the sheet of paper over it. The electrograph is at work in several Italian observatories, and might be adapted for signalling the approach of hailstorms in stations for firing at the clouds to avert hail. The distance atwhich a storm can be signaled depends on the height of the antenna, and the strength as well as the height of the atmospheric discharge. An antenna of about forty feet on an elevation without surrounding obstacles can tell of a storm over sixty miles away. An illustrated description of the apparatus appears in the Electrical Review.

BOTTLE FLOATED TWENTY-EIGHT YEARS.

A bottle recently picked up off the coast of Massachusetts contained a message saying that it had been thrown overboard from the ship Hattie E. Tapley, of Bangor, on April 13, 1874, in the Indian Ocean. This message has been generally regarded as a hoax, but Capt. George H. Tapley, of West Brooksville, Me., who then commanded the ship, says that in April, 1874, she was in the Indian Ocean; that neither he, the second mate nor the steward, both of whom have been questioned, threw the bottle into the sea, but that a German sailor probably wrote the paper, now yellow with age and set the bottle afloat.

UNDER THE GERMAN FLAG.

It is reported in shipping circles, according to the New York Journal of Commerce, that it is the intention of the Great Northern Steamship Co. (the Great Northern Railway Co.) to place under a foreign flag its two steamers now building for the oriental trade at the Eastern shipbuilding yards, New London, Conn. Much interest has naturally been caused by the report, as these two steamers, when completed, will be the largest vessels in point of tonnage, displacement, and carrying capacity in the world. They will be about 21,000 tons register and 38,000 tons load displacement to the deep-load line.

Investigation shows, says the paper mentioned, that while the report may not be declared entirely correct, there is much substantial basis for it. The facts are that competition in the oriental trade is so keen—and is constantly becoming keener—that J J. Hill and his friends feel the need of securing every advantage possible. Preference leans, apparently, toward the German flag owing to Germany's advantageous navigation laws.

Mr. Hill's objections to the American flag are said not to be based on the question of expense or high wages, but on the lack of protection to shipowners. The German laws give the captain the most effective control of the crew.

MARINE BIOLOGICAL WORK.

Prof. Conway MacMillan, of the University of Minnesota, lectured last week before the Natural History Society, Toronto, on "Marine Biological Work on the Straits of Fuca, on the Pacific Coast." He showed a series of slides, illustrating scenery along the Canadian Pacific Railway, over which route he conducted last year a party of thirty-five for a summer's work at his station, Port Renfrew, B. C.

Prof. MacMillan said he was led to establish this outpost of research to associate the many teachers of natural science in high schools and colleges of Canada and the United States, who have hitherto not been introduced to the surprising faunal and floral wealth of the Pacific coast. It was his intention to divert a portion of the stream of scientific pilgrims from the stations on the Atlantic to those on the Pacific, in order that both coasts might receive adequate survey. In one of his slides the lecturer showed the liberal and international spirit in which his station is founded, the Union Jack and Stars and Stripes floating side by side from a staff in front of the buildings. Other slides illustrating the sea weed of the coast were interesting and showed how the vegetation from that region differs with the growth in the Maritime Provinces.

After the close of the National Education Association meeting, next July, Prof. MacMillan will take a party of teachers west, and one of the objects of his lecture was to interest the science teachers of Montreal in the opportunities for marine study and research, at his laboratory in Vancouver.

At the close of the lecture a vote of thanks moved by Prof Wesley Mills, and seconded by Prof. Penhallow, was extended to the lecturer, who left for Boston, where he will present further lines of his work.

The Lake Carriers' Association won two of the points for which they have been contending when the House Committee on Rivers and Harbors, at Washington, this week, reported in favor of a $330,000 cash appropriation for another canal immediately adjoining the present cut in Lake St. Clair Flats. They also won out as far as the House bill is concerned in getting a favorable report and a recommendation for a $4,000,000 appropriation for improvements at the West Neebish in order to provide a wider and safer channel for vessels trading to and from Lake Superior. For years it has been held by the Lake Carriers' Association that in order to accommodate the rapi increasing tonage on the lakes it would be necessary to provide another cut in St. Clair Flats, thus furnishing two channels, one for up-bound boats and another for down-bound boats. Colonel G. J. Lydecker, who for nine years was United States engineer in charge of the waters between Lake Erie and Lake Superior, was in favor of another canal at this point, and he, in his recommendations to Congress, advocated the improvement, but failed, together with the rivers and harbors bill a year ago when it was talked to death in the Senate.

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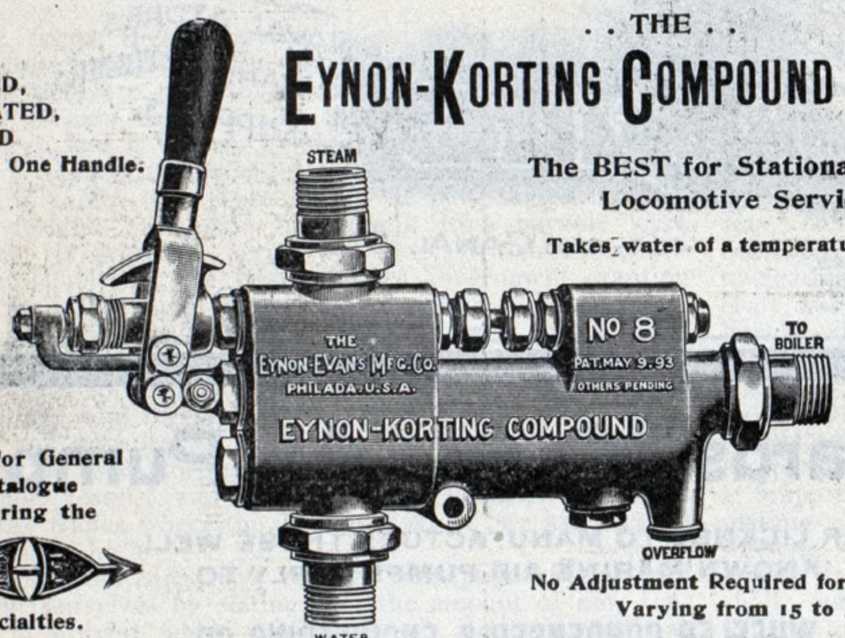

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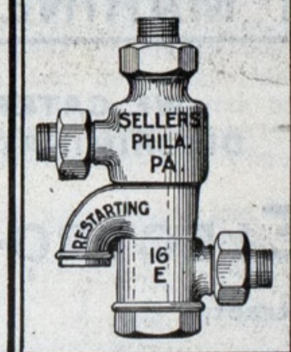

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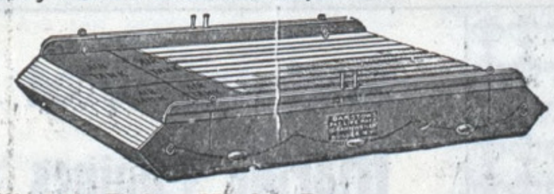
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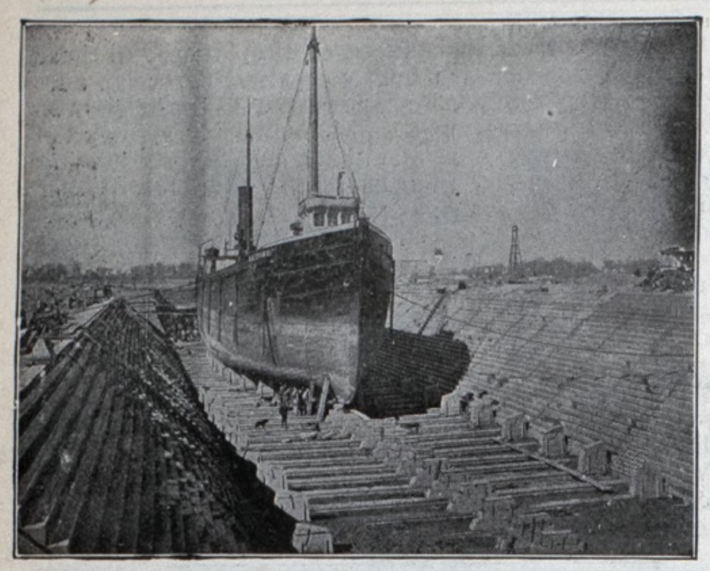

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